ᏩᎠ CONTROL DATA

CDC® EMD/SABRE EIGHT-INCH MODULE DRIVE

PA8G1/PA8G2 (736 MB)

PA8K1/PA8K2 (850 MB)

PA8W2   (1120 MB)

PA8N1/PA8N2 (1230 MB)

GENERAL DESCRIPTION

OPERATION

INSTALLATION AND CHECKOUT

USER'S MANUAL

WARNING

Do not attempt to install, operate, or repair the unit before you read the important safety information located directly after the revision record in this manual. Failure to follow that and other safety precautions in this manual could cause injury to yourself and others.

VORSICHT

Versuchen Sie nicht, das Gerät zu installieren, zu betreiben oder zu reparieren bevor Sie die in der Anlage C aufgeführten Installations- und Betriebserfordernisse sorgfältig gelesen haben. Die Nichtbeachtung dieser und weiterer in diesem Manual gegebenen Informationen kann Verletzungen Ihrer selsbt und Anderer zur Folge haben.

AVERTISSEMENT

Ne tentez pas d'installer, de mettre en marche, ou de dépanner cet appareil avant d'avoir lû les instructions d'installation et de fonctionnement données dans l'appendice D. A défaut d'observer ceci ainsi que les autres informations de ce manuel vous pourriez mettre votre propre santé en danger, ou celle d'autrui.

PRECAUCION

No intente instala, operar ó reparar está unidad antes de leer los requerimientos de instalación y operación dados en el Apéndice E. Cualquier negli gencia en seguir esta u otra información dada en esta manual puede causarle daños a uno mismo u otros.

WARNING

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

If the operator or status/control panel (component assembly) is not installed in the inner drawer, it is your responsibility to provide any additional RFI shielding or grounding needed to ensure FCC Class A compliance.

⊖⊇ CONTROL DATA

CDC® EMD/SABRE
EIGHT-INCH MODULE DRIVE

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GENERAL DESCRIPTION

OPERATION

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REVISION RECORD

REVISION	DESCRIPTION
01 (12-17-86)	Prereleased. Information in this edition is subject to change without notice.
A (04-15-87)	Original release. This edition obsoletes all previous editions.
B (09-09-87)	Documents PA8K1/PA8K2 850 MB drives (ECO DJ29265), PA8N1/PA8N2 1230 MB drives (ECO DJ29338), changes required for FCC compliance (ECO DJ29353), and voltage converter (ECO DJ29296). Technical and editorial changes. This edition obsoletes all previous editions.
C (07-22-88)	Documented PA8W2-A drives. Documented sweep cycle and 9-disk module. Showed switch settings for new sector counter (14 switches). Added operating instructions in Spanish. Technical and editorial changes. This edition obsoletes all previous editions.

LIST OF EFFECTIVE PAGES

This manual is at revision __C__. Each page in your
manual should be at the revision level listed
below. The "Div" is a colored divider page.

PAGE/REV		PAGE/REV		PAGE/REV		PAGE/REV		PAGE/REV	
Cover	–	2-7	B	3-37	B	3-79	C	A-3	B
Warnings	–	2-B	B	3-38	B	3-B0	C	A-4	C
Title P	–	2-9	B	3-39	C	3-B1	C	A-5	C
f-2	C	2-10	B	3-40	C	3-82	C	A-6	B
f-3	C	S-3 Div	–	3-41	C	3-83	C	A-7	B
f-4	C	Blank	–	3-42	C	3-84	C	A-8	C
f-5	C	3-1	B	3-43	C	3-85	C	A-9	C
f-6	C	3-2	B	3-44	C	3-86	C	A-10	C
f-7	B	3-3	B	3-45	C	3-B7	C	A-11	C
f-8	C	3-4	C	3-46	C	3-88	C	A-12	B
f-9	C	3-5	B	3-47	C	3-B9	C	A-13	C
f-10	C	3-6	C	3-48	C	3-90	C	A-14	C
f-11	C	3-7	B	3-49	C	3-91	C	A-15	B
f-12	C	3-B	B	3-50	C	3-92	C	Blank	–
f-13	C	3-9	B	3-51	C	3-93	C	App B Div	–
f-14	C	3-10	B	3-52	C	3-94	C	Blank	–
f-15	B	3-11	B	3-53	C	3-95	C	B-1	C
f-16	B	3-12	B	3-54	C	3-96	C	B-2	C
f-17	B	3-13	B	3-55	C	3-97	C	B-3	C
f-18	B	3-14	B	3-56	C	3-98	C	B-4	C
S-1 Div	–	3-15	C	3-57	C	3-99	C	B-5	C
Blank	–	3-16	C	3-58	C	3-100	C	B-6	C
1-1	C	3-17	C	3-59	C	3-101	C	B-7	C
1-2	C	3-1B	C	3-60	C	3-102	C	B-8	C
1-3	C	3-19	C	3-61	C	3-103	C	B-9	C
1-4	B	3-20	B	3-62	C	3-104	C	B-10	C
1-5	C	3-21	B	3-63	C	3-105	C	B-11	C
1-6	C	3-22	C	3-64	C	3-106	C	B-12	C
1-7	B	3-23	B	3-65	C	3-107	C	B-13	C
1-8	C	3-24	B	3-66	C	3-108	C	B-14	C
1-9	B	3-25	C	3-67	C	3-109	C	B-15	C
1-10	C	3-26	B	3-68	C	3-110	C	B-16	C
1-11	B	3-27	C	3-69	C	3-111	C	App C Div	–
Blank	–	3-28	C	3-70	C	3-112	C	Blank	–
S-2 Div	–	3-29	B	3-71	C	3-113	C	C-1	C
Blank	–	3-30	B	3-72	C	3-114	C	C-2	C
2-1	B	3-31	B	3-73	C	3-115	C	C-3	B
2-2	B	3-32	B	3-74	C	Blank	–	C-4	C
2-3	B	3-33	B	3-75	C	App A Div	–	C-5	C
Blank	–	3-34	B	3-76	C	Blank	–	C-6	B
2-5	B	3-35	C	3-77	C	A-1	B	C-7	B
2-6	B	3-36	B	3-78	C	A-2	B	Blank	–

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LIST OF EFFECTIVE PAGES (Contd)

PAGE/REV	
App D Div	–
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D–1	C
D–2	C
D–3	C

PAGE/REV	
D–4	C
D–5	C
D–6	B
D–7	B
Blank	–

PAGE/REV	
App E Div	–
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E–1	C
E–2	C
E–3	C

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E–4	C
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E–6	C
E–7	C
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PAGE/REV	
Cmt Sht	–
Rtn Env	–
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Cover	–

PREFACE

This manual contains maintenance information for the CONTROL DATA® PA8G1, PA8G2, PA8K1, PA8K2, PA8N1, PA8N2, and PA8W2 Eight-Inch Module Drives (EMDs). It provides instructions to all personnel who operate the EMD and to customer engineers who install and check out the EMD. Customer engineers who troubleshoot and repair EMDs should obtain copies of the manuals listed below.

As you use these manuals, you will find information specific to either the PA8G1/PA8G2 drives, the PA8K1/PA8K2 drives, the PA8N1/PA8N2 drives, or the PA8W2 drives. Specific references to one type of drive or the other are keyed to the nominal drive capacity as follows:

- PA8G1/PA8G2 EMDs are referred to as 736 MB drives.

- PA8K1/PA8K2 EMDs are referred to as 850 MB drives.

- PA8W2 EMDs are referred to as 1120 MB drives.

- PA8N1/PA8N2 EMDs are referred to as 1230 MB drives.

The information in this manual is presented as follows:

Section 1 — General Description. Describes equipment functions and specifications.

Section 2 — Operation. Describes and illustrates the location and use of all controls and indicators, and provides operating procedures.

Section 3 — Installation and Checkout. Describes site requirements, unpackaging and inspection, installation and checkout.

Appendix A — Diagnostic Testing and Status Code Summary. Provides simplified troubleshooting information.

Appendix B — Reference Material for Sector Selection. Provides additional information on setting sector switches.

Appendix C — Installation and Operating Requirements (German). Contains basic installation and operation information in the German language.

Appendix D - Installation and Operating Requirements
(French). Contains basic installation and
operation information in the French language.

Appendix E - Installation and Operating Requirements
(Spanish). Contains basic installation and
operation information in the French language.

New features, technical changes, additions, and deletions in
this manual are indicated as follows:

- A vertical bar in the outer margin of a page marks the
  changed area.

- A dot by the page number indicates the entire page
  contains new or changed information.

- A vertical bar by the page number indicates the
  information was moved from another page, but there were
  no technical or editorial changes.

The following manuals apply to the EMD and are available from
Control Data Corporation, Literature Distribution Services, 308
North Dale Street, St Paul, MN 55103:

Publication No.	Title
83325690	PA8XX Theory Manual
83325700	PA8XX Parts Data Manual (contains listings of field replaceable parts, manufacturer's recommended spare parts, and accessories)
83325710	PA8G1/PA8G2/PA8K1/PA8K2/PA8N1/PA8N2 User's Manual (contains general description, operation, installation & checkout information)
83325720	PA8XX Maintenance Manual (contains general maintenance information, trouble analysis, and repair & replacement)
83325730	PA8XX Diagrams Manual
83325660	Reference Card (summarizes status codes and diagnostic operation for drives with the SMD-E interface)

CONTENTS

C.   INSTALLATION AND OPERATING REQUIREMENTS (GERMAN)

D.   INSTALLATION AND OPERATING REQUIREMENTS (FRENCH)

E.   INSTALLATION AND OPERATING REQUIREMENTS (SPANISH)

FIGURES

TABLES

IMPORTANT SAFETY INFORMATION AND PRECAUTIONS

Use of proper safety and repair techniques is important for safe, reliable operation of this unit. Service should be done only by qualified persons. We recommend the procedures in this manual as effective ways of servicing the unit. Some procedures require the use of special tools. For proper maintenance and safety, you must use these tools as recommended.

The procedures in this manual and labels on the unit contain warnings and cautions that must be carefully read and followed to minimize or eliminate the risk of personal injury. The warnings point out conditions or practices that may endanger you or others. The cautions point out conditions or practices that may damage the unit, possibly making it unsafe for use.

You must also understand that these warnings and cautions are not exhaustive. We cannot possibly know, evaluate, and advise you of all the ways in which maintenance might be performed or the possible risk of each technique. Consequently, we have not completed any such broad evaluation. If you use a non-approved procedure or tool, first ensure that the method you choose will not risk either your safety or unit performance.

For the safety of yourself and others, observe the following warnings and precautions.

- Perform all maintenance by following the procedures in this manual.

- Follow all cautions and warnings in the procedures and on unit labels.

- Use the special tools called out in the procedures.

- Use sound safety practices when operating or repairing the unit.

- Use caution when troubleshooting a unit that has voltages present. Remove power from unit before servicing or replacing parts.

- Wear safety glasses when servicing units.

- Wear safety shoes when removing or replacing heavy parts.

- Use only designated CDC/MPI replacement parts. Non-CDC/MPI replacement parts can adversely affect safety in addition to degrading reliability, increasing maintenance downtime, and voiding warranty coverage.

- Use care while working with the power supply because line voltages are always present when the ac power cord is connected to a power source. Setting the power supply switch to position "0" disables dc power to the drive but has no effect on ac power within the supply. For complete safety, remove the ac power plug from the site power outlet.

- In case of fire or other emergency, isolate the drive from main power by removing the drive power plug from the ac outlet. In situations where pulling the plug is not possible or practical, use the system main power disconnect to isolate the drives from main power.

- When the drive is mounted in an equipment rack or cabinet, ensure that the internal temperature of the rack or cabinet will not exceed the limits defined for the drive. Where units are stacked vertically, pay special attention to the top where temperatures are usually highest.

- This drive is designed to be installed and operated in accordance with IEC380, IEC435, VDE805, VDE806.

- Follow the precautions listed under Electrostatic Discharge Protection in section 3 of this manual.

- If the power supply is placed on a bench for testing, position the supply so all ventilation holes are open, to allow proper air flow to internal components.

- Do not attempt to disassemble the module. It is not field repairable. Replace the entire module assembly if it is defective.

- Do not operate the drive over an extended period of time without the top cover installed.

- If the power supply is connected to an IT network, ensure that the input voltage is limited to 230 volts.

- Do not attempt to disassemble the power supply. It is not field repairable. Replace the entire supply if it is defective.

- Always deenergize drive before removing or installing circuit boards, cables, or any other electrical components.

- If you do not use a recommended CDC power supply, ensure that the supply meets the specifications in this manual and is designed to be used in accordance with IEC380, IEC435, VDE805, VDE806.

ABBREVIATIONS

A	Ampere	CLK	Clock
ABV	Above	CLR	Clear
ac	Alternating Current	cm	Centimetre
ADD	Address	CNTR	Counter
ADDR	Address	COMP	Comparator
ADJ	Adjust	CONT	Control
ADRS	Address	CONTD	Continued
AGC	Automatic Gain Control	CT	Center Tap
ALT	Alternate	CYL	Cylinder
AM	Address Mark	D/A	Digital to Analog
AME	Address Mark Enable	dc	Direct Current
AMP	Amplifier, Ampere	DET	Detect
ASSY	Assembly	DIFF	Differential
BLW	Below	DIV	Division
C	Celsius	DLY	Delay
CB	Circuit Breaker	DRVR	Driver
CDA	Complete Drive Assembly	ECL	Emitter Coupled Logic
CDC	Control Data Corporation	ECO	Engineering Change Order
CH	Channel	EMD	Eight-Inch Module Drive
CHK	Check	EN	Enable

ABBREVIATIONS (Contd)

ENBL	Enable	in	Inch
EXT	External	IND	Index
F	Fahrenheit, Fuse	INTRPT	Interrupt
FCO	Field Change Order	I/O	Input/Output
FDBK	Feedback	IPB	Illustrated Parts Breakdown
FIG	Figure		
FLT	Fault	kg	Kilogram
FRU	Field Replaceable Unit	kPa	Kilopascal
ft	Foot	kW	Kilowatt
FTU	Field Test Unit	lb	Pound
FWD	Forward	LCD	Liquid Crystal Display
GND	Ground	LED	Light Emitting Diode
HD	Head	LSI	Large Scale Integration
HEX	Hexagon, Hexadecimal	LTD	Lock to Data
Hg	Mercury	m	Metre
HR	High Resolution	MAX	Maximum
HYST	Hysteresis	MB	Megabyte
Hz	Hertz	MEM	Memory
IC	Integrated Circuit	MHz	Megahertz
IDENT	Identification	mm	Millimetre

ABBREVIATIONS (Contd)

MPI	Magnetic Peripherals, Inc.		PLO	Phase Lock Oscillator
MPU	Microprocessor Unit		PROC	Procedure
MRK	Mark		PROG	Programmable
ms	Millisecond		PS	Power Supply
MTR	Motor		PWR	Power
mV	Millivolt		RCVR	Receiver
NC	No Connection		RD	Read
NORM	Normal		RDY	Ready
NRZ	Non Return to Zero		REF	Reference
ns	Nanosecond		REQ	Request
OC	On Cylinder		RES	Resolution
OS	One-Shot		REV	Reverse, Revision
OSC	Oscillator		RGTR	Register
P	Plug		r/min	Revolutions Per Minute
PD	Peak Detect		RTZ	Return to Zero
pF	Picofarad		R/W	Read/Write
PFTU	Programmable Field Test Unit		s	Second
			S/C	Series Code
PG	Page		SEC	Second
PHH	Phillips Head		SEL	Select

ABBREVIATIONS (Contd)

SEQ	Sequence		VCO	Voltage Controlled Oscillator
SPD	Speed		W	Watts
SS	Sector Switch		W/	With
T	Tracks to go		W/O	Without
TF	Thread Forming		W P	Write Protect
TIM	Timer		W+R	Write or Read
TP	Test Point		W·R	Write and Read
TSP	Troubleshooting Procedure		WRT	Write
TTL	Transistor-Transistor Logic		XFR	Transfer
V	Volts, Voltage		Ω	Ohms
Vbb	Bias Voltage		$	Hexadecimal Address
VCC	Bias Voltage		µF	Microfarad
			µs	Microsecond

SECTION 1

GENERAL DESCRIPTION

INTRODUCTION

The Control Data PA8G1/PA8G2, PA8K1/PA8K2, PA8N1/PA8N2, and
PA8W2 Eight-Inch Module Drives (EMDs) are high speed, random
access digital data storage devices that connect to a central
processor through a controller. Equipment specifications for
the drive are listed in table 1-1.

The remainder of this section provides a general description of
the drive and is divided into the following areas:

- Equipment Interface Description -- Describes available
  drive interfaces.

- Equipment Functional Description -- Explains the basic
  function of the drive.

- Equipment Physical Description -- Provides a basic
  description of the drive's physical characteristics.

- Equipment Configuration -- Describes the various drive
  configurations and how to identify them.

EQUIPMENT INTERFACE DESCRIPTION

The drive can be configured to operate with either a standard
(SMD-O) or an enhanced (SMD-E) interface. Refer to section 3
of this manual for definitions of signals on the interface
cables (under Interface Requirements). Section 3 also contains
instructions on selecting the various interface options
available (under Setting Circuit Board Switches). Refer to the
theory manual for a complete description of interface functions.

EQUIPMENT FUNCTIONAL DESCRIPTION

The drive contains all the circuits and mechanical devices
necessary to record data on and recover it from its disks. The
necessary power for this is provided by the power supply, which
receives its input power from the site main power source.

TABLE 1-1.   DRIVE SPECIFICATIONS

Characteristics	Conditions	Specifications
Size	Dimensions	See Space Requirements in section 3
	Weight (Drive only)	14.8 kg (32.8 lb)
	Weight (Power Supply only)	3.6 kg (8.0 lb)
Interface	SMD-O/SMD-E	

Recording	Total Capacity
	  PA8G1/PA8G2
	  PA8K1/PA8K2
	  PA8W2
	  PA8N1/PA8N2
		(Unformatted)
		 741.63 MB (736 nominal)
		 851.14 MB (850 nominal)
		1123.05 MB (1120 nominal)
		1236.06 MB (1230 nominal)

	Bytes per track
	  736 MB drives
	  850 MB drives
	  1120 MB drives
	  1230 MB drives
		(Unformatted)
		30 240 bytes
		41 088 bytes
		45 792 bytes
		50 400 bytes

	Number of disks	9
	Movable data heads	15
	Servo Heads	1
	Physical heads per surface	1

	Logical cylinders per head/disk assy
	  736 MB drives
	  850 MB drives
	  1120 MB drives
	  1230 MB drives
		
		1635 (0-1634)
		1381 (0-1380)
		1635 (0-1634)
		1635 (0-1634)

	Modulation	2-7 code
Table Continued on Next Page		

TABLE 1-1. DRIVE SPECIFICATIONS (Contd)

Characteristics	Conditions	Specifications
Transfer rate	Disk speed at 3600 r/min 736 MB drives 850 MB drives 1120 MB drives 1230 MB drives	14.52 MHz (1.814 MB/s) 19.72 MHz (2.465 MB/s) 21.98 MHz (2.750 MB/s) 24.19 MHz (3.024 MB/s)
Latency		Latency is time to reach a particular track address after positioning is complete.
	Average	8.33 milliseconds (disk rotation speed at 3600 r/min)
	Maximum	16.83 milliseconds (disk rotation speed at 3564 r/min)
Seek Time	Full	35 milliseconds maximum
	Average	16 milliseconds
	Single Track	5 milliseconds maximum
Start Time		90 seconds maximum
Stop Time		60 seconds maximum

All functions performed by the drive are done under direction
of the controller. The controller communicates with the drive
via the interface which consists of a number of I/O lines
carrying the necessary signals to and from the drive.

Some interface lines, including those that carry commands to
the drive, are not enabled unless the drive is selected by the
controller. Unit selection allows the controller, which can be
connected to more than one drive, to initiate and direct an
operation on a specific drive.

All operations performed by the drive are related to data
storage and recovery (normally referred to as writing and
reading). The actual reading and writing is performed by
electromagnetic devices called heads that are positioned over
the recording surfaces of the rotating disks. There is one
head for each disk surface. The heads are positioned in such a
way that data is written in concentric tracks around the disk
surfaces (see figure 1-1).

Before any read or write operation can be performed, the
controller must instruct the drive to position the heads over
the desired cylinder (called seeking) and use the head located
over the surface (head selection) where the operation is to be
performed.

After selecting a head and arriving at the data track, the
controller must locate that portion of the track where the data
is to be written or read. This is called track orientation and
is done by using the Index and Sector signals generated by the
drive. The Index signal indicates the logical beginning of
each track. The Sector signals are used by the controller to
determine the position of the head on the track with respect to
Index.

When the desired location is reached, the controller commands
the drive to actually read or write the data. During a read
operation, the drive recovers data from the disks and transmits
it to the controller. During a write operation, the drive
receives data from the controller, processes it and writes it
on the disks.

The drive is also capable of recognizing certain errors that
may occur during its operation. When an error is detected, it
is indicated either by a signal to the controller or by a
maintenance indicator on the drive itself.
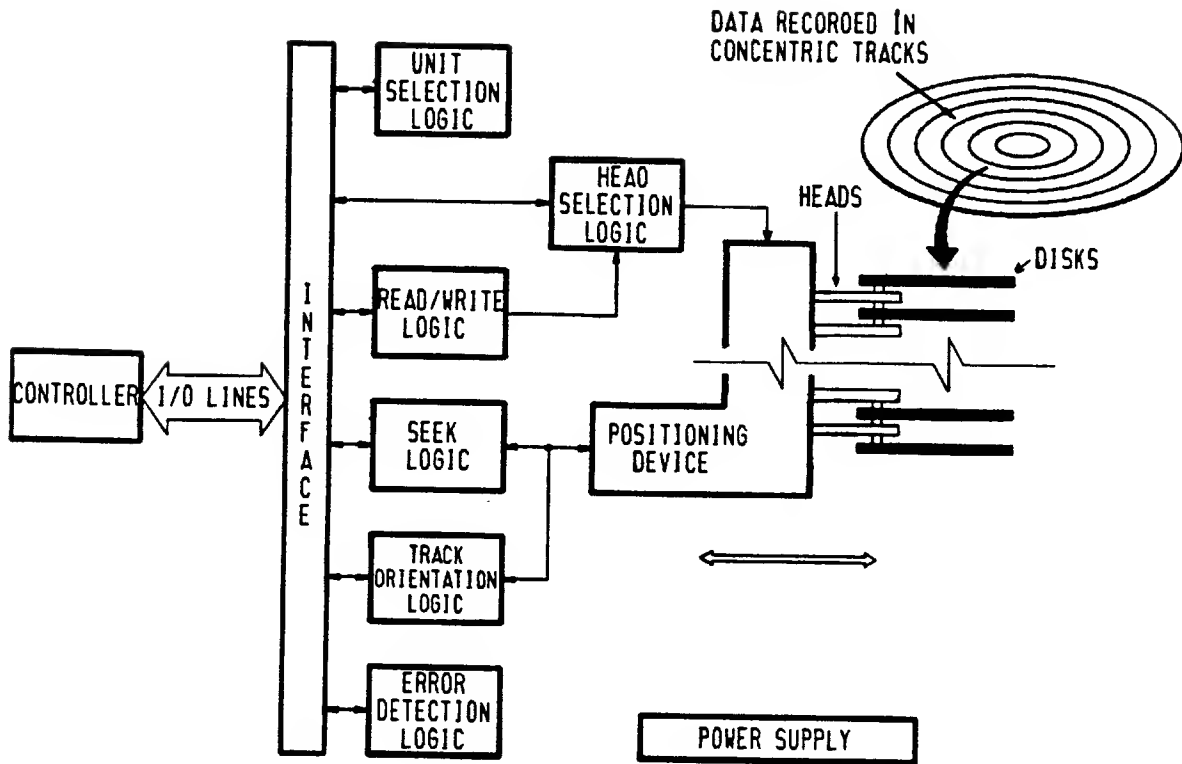
Figure 1-1.   Drive Functional Block Diagram

EQUIPMENT PHYSICAL DESCRIPTION

The following paragraphs provide a physical description of the drive. The components mentioned in this discussion are identified in figure 1-2.

A drive installation requires a drive, interconnecting cabling, and a power supply. Site power enters the power supply via the ac power cable. The power supply develops the dc voltages required by the drive. These voltages are supplied to the drive by the dc power cable.

TOP COVER

POWER SUPPLY △1 △2

I/O BOARD

AC POWER
CABLE

CONTROL BOARD

MODULE △3

I/O CABLE
CONNECTORS

COOLING
FAN

△1 △4
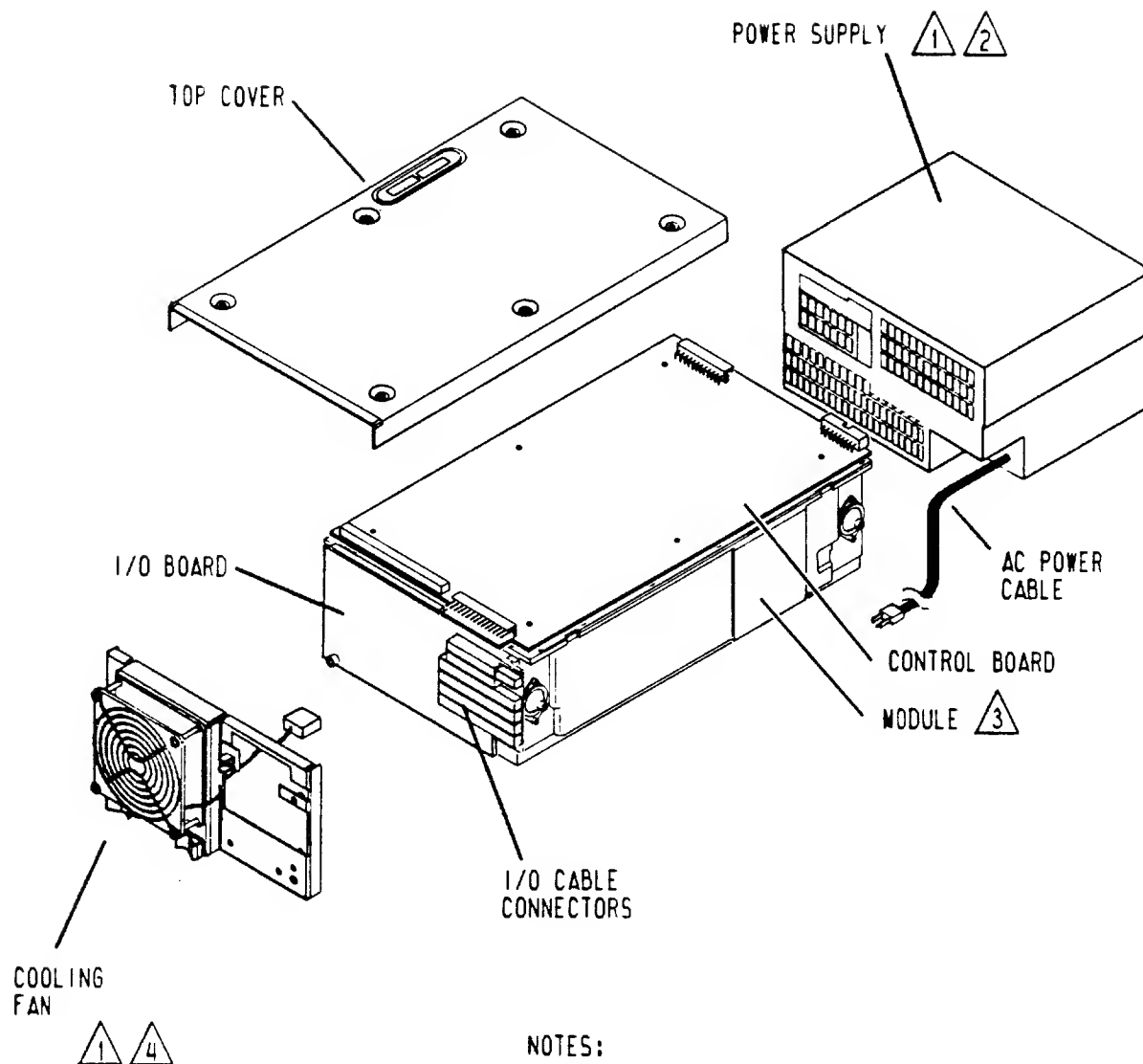
NOTES:

△1 OPTIONAL

△2 MOUNTED DIRECTLY IN FRONT OF DRIVE (IN 2X
DRAWER) OR MOUNTED IN REMOTE LOCATION

△3 MODULE CONTAINS THE DISKS, SPINDLE,
DRIVE MOTOR, ACTUATOR, AND THE HEADS.

△4 USED WHEN POWER SUPPLY IS
MOUNTED IN REMOTE LOCATION.

IIH70B

Figure 1-2. Drive Major Assemblies (Sheet 1 of 2)

ADJUSTING
BRACKET

SLIDE
ASSY ⚠1

⚠1
POWER
SUPPLY

DRIVE

FRONT
PANEL

INNER
DRAWER ⚠2

FILTER

2X DRAWER ⚠1

FRONT PANEL
INSERT

STATUS/CONTROL
PANEL ⚠3

OPERATOR
PANEL ⚠3

NOTES:

⚠1 OPTIONAL

⚠2 TWO DRIVES AND POWER SUPPLIES
MAY BE MOUNTED SIDE-BY-SIDE
IN 2X DRAWER

⚠3 THE OPTIONAL OPERATOR PANEL
OR STATUS/CONTROL PANEL MOUNTS
BEHIND THE FRONT PANEL INSERT.

11H71
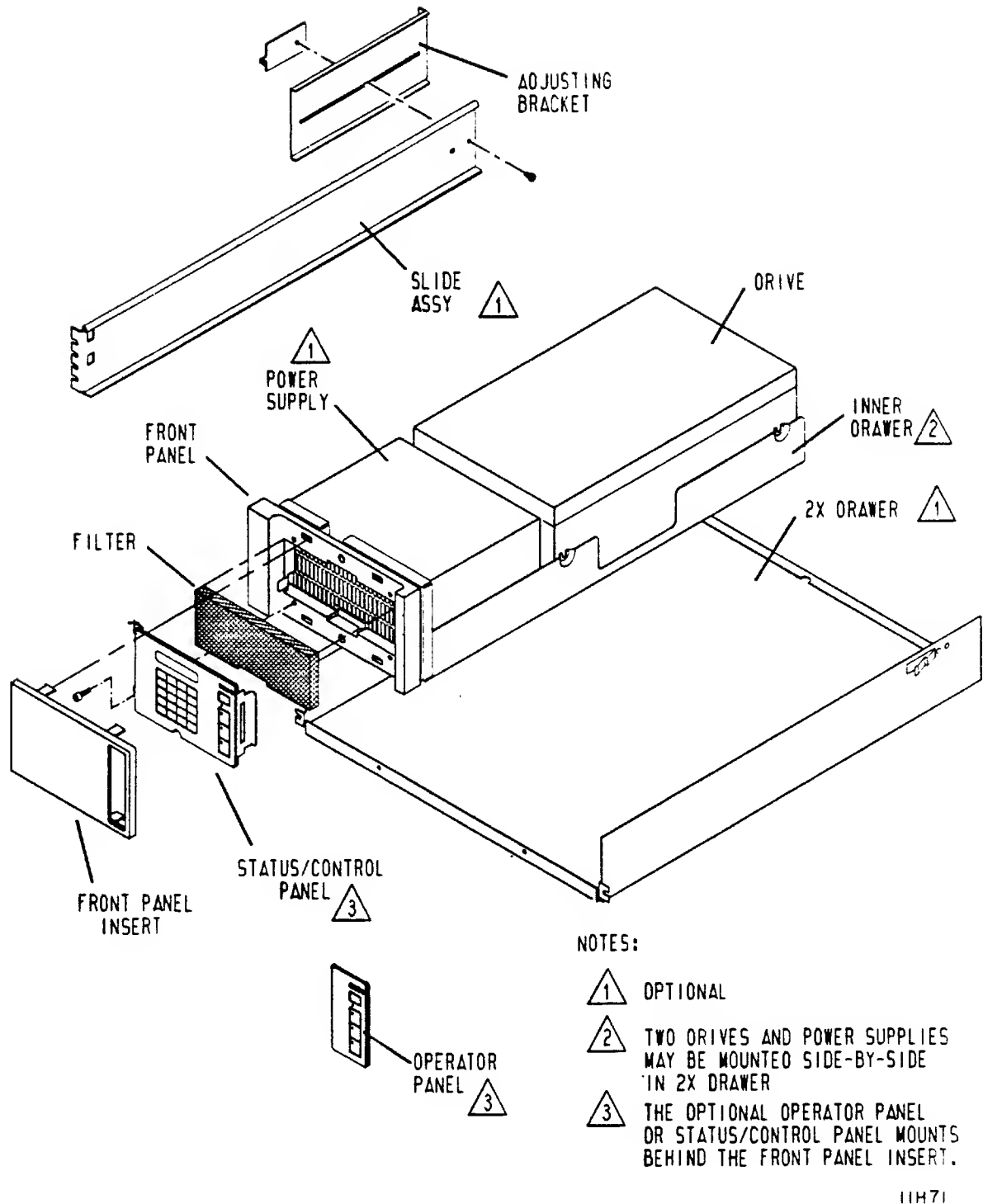
Figure 1-2.   Drive Major Assemblies (Sheet 2)

The drive package includes a top cover, rear panel, module, and two circuit boards. Air flow is provided by a cooling fan. The cooling fan is an integral part of the optional power supply, and provides cooling air to the drive when the power supply is mounted directly in front of the drive. When the power supply is mounted in a remote location, drive cooling is provided by an optional fan and rear panel assembly.

Two optional panels provide external control of the drive. The operator panel contains basic switches and indicators for the operator. The status/control panel contains these same switches and indicators and, for troubleshooting, a diagnostic keyboard and display. These panels can be mounted either inline with the drive and power supply or in a remote location.

The drive's internal components include two circuit boards and a module. The circuit boards are mounted on the module, and they contain the electronics required for drive operation. The module is a sealed unit containing the electromechanical components used for data storage and retrieval. These components include the disks, spindle, drive motor, actuator and heads.

The nine disks provide the recording medium for the drive. These disks are mounted on a spindle, and the spindle is coupled directly to the drive motor. When activated, the drive motor rotates the disks at 3600 r/min and also produces a circulation of air within the sealed module.

The actuator is the assembly that holds the heads and moves the heads over the rotating disks. There are 16 heads; a servo head to sense actuator positioning, and 15 data heads used for data transfers to and from the disks. The actuator has a voice coil that rotates in and out of a permanent magnetic field in response to signals from the servo positioning circuitry. The voice coil moves the heads in an arc across the rotating disks. When the drive is not in use, the heads rest on the disk surface in the preassigned landing zone (beyond the data zone). The actuator is automatically latched in this position at shutdown for moving or shipping protection. When the drive is activated to bring the disks up to speed, the heads fly on a cushion of air close to the disk surface.

The drive may be mounted either in a cabinet or rack. An optional 2X drawer with a front panel for each drive is available for mounting two drives and power supplies side-by-side.

A complete listing of field-replaceable parts is given in the parts data manual. Refer to the theory manual for theory of operation of drive components.

EQUIPMENT CONFIGURATION

The equipment configuration is identified by the equipment identification label and by the Equipment Configuration Log. It is necessary to identify the equipment configuration to determine if the manuals being used are applicable to the equipment. The following describes the equipment identification label, Equipment Configuration Log, and Manual To Equipment Level Correlation Sheet.

EQUIPMENT IDENTIFICATION

The equipment is identified by labels attached to the drive top cover and to the power supply. The label on the drive top cover identifies the basic mechanical and logical configuration of the drive at the time it leaves the factory. To maintain drive configuration whenever the top cover is removed, always identify which drive the top cover was removed from. The label on the power supply references the components making up the drive installation and lists the site power requirements for the power supply. The information contained on these labels is defined in the following paragraphs.

Equipment Identification Number

The equipment identification number is divided into the two parts shown in the example:

EXAMPLE:

```
                    PA8          G1A
                     |            |
    Equipment _____|            |_____ Type
    Identifier                           Identifier
```

The equipment identifier indicates the basic functional capabilities of the drive.

The type identifier indicates differences between drives that have the same equipment identifier. These differences are necessary to adapt a drive to specific system requirements. However, they do not change the overall capabilities of the drive as defined in table 1-1.

Series Code

The series code represents a time period within which a unit is built. All units are interchangeable at the system level, regardless of series code; however, parts differences may exist within units built in different series codes. When a parts difference exists, that difference is noted in the parts data manual.

Part Number

The equipment identification label on the power supply lists three numbers: the equipment package part number, the Complete Drive Assembly (CDA) number, and the power supply number. The equipment package part number is the number assigned to the complete unit including drive, power supply (if applicable), painted panels, installation hardware, etc. The power supply number is the part number for the power supply only.

Serial Number

Each drive has a unique serial number assigned to it. Serial numbers are assigned sequentially within a family of drives. Therefore, no two equipments will have the same serial number.

EQUIPMENT CONFIGURATION LOG

Engineering Change Orders (ECOs) are electrical or mechanical changes that are performed at the factory. When the factory installs an ECO early (prior to a series code change), it is logged on the unit's configuration log.

Field Change Orders (FCOs) are electrical or mechanical changes that may be performed either at the factory or in the field. FCO changes do not affect the series code but are indicated by an entry on the Equipment Configuration Log that accompanies each machine. The components of a machine with an FCO installed may not be interchangeable with those of a machine without the FCO; therefore, it is important that the you enter the FCO on the Equipment Configuration Log when you install the FCO.

MANUAL TO EQUIPMENT LEVEL CORRELATION

Throughout the life cycle of a machine, changes are made, either in the factory build (a series code change) or by FCOs installed in the field. All of these changes are also reflected in changes to the manual package. In order to assure that the manual correlates with the machine, refer to the manual to equipment level correlation sheet located in the front matter of the parts data manual. This sheet records all the FCOs that are reflected in the manuals. It should agree with the machine Equipment Configuration Log if all the FCOs have been installed in the machine.

SECTION 2

OPERATION

OPERATION

INTRODUCTION

This section provides the information and instructions to operate the drive. It is arranged as follows:

- Switches and Indicators -- Locates and describes the switches and indicators used for normal drive operation.

- Air Filter -- Describes filter maintenance for the drive operator.

- Operating Instructions -- Describes procedures for operating the drive.

SWITCHES AND INDICATORS

Switches and indicators used by the operator are on the power supply and the optional operator panel or status/control panel. Figure 2-1 shows these switches and indicators. They are explained in table 2-1.

As shown in figure 2-1, both the status/control panel and the operator panel provide identical sets of switches and indicators for the operator. In addition, the status/control panel has a diagnostic keyboard and liquid crystal display, intended for maintenance use. Refer to appendix A for a description of the maintenance features of the status/control panel.

Operation of a drive that does not have either type of panel is controlled by setting the appropriate switches on the control and I/O boards. LED indicators on the control board provide status on several drive conditions. Refer to section 3 for information on these switches and indicators. Normally the drive operator does not use them.

ON/STANDBY
SWITCH ⚠

VOLTAGE SELECT
SWITCH ⚠

NOTES:
⚠ ON = 1, STANDBY = 0
⚠ VOLTAGE SELECTIONS: 115 V OR 230 V

11F23

STATUS/CONTROL
PANEL

OPERATOR
PANEL

COVERED BY PANEL

DIAGNOSTIC
KEYBOARD

LIQUID CRYSTAL DISPLAY

LOGICAL ADDRESS
INDICATORS
LOGICAL ADDRESS
SWITCH
UNIT SELECTED
INDICATOR
READY INDICATOR
START SWITCH
FAULT INDICATOR
FAULT CLEAR
SWITCH
WRITE PROTECT
INDICATOR
WRITE PROTECT
SWITCH

DIAGNOSTIC MODE
SWITCH

DIAGNOSTIC EXECUTE
SWITCH

BACKSPACE SWITCH

SPACE SWITCH

11H72

Figure 2-1. Switches and Indicators

TABLE 2-1.   DRIVE SWITCHES AND INDICATORS

Switch or Indicator	Function
POWER SUPPLY	
On/Standby Switch (1/0)	Applies dc operating voltages to the drive electronics and fan when placed in the On (1) position.
OPERATOR PANEL OR STATUS/CONTROL PANEL	
Logical Address Switch (ADDRESS)/ Indicators (8/4/2/1)	The Logical Address switch establishes the logical address of the drive. The switch must be pressed for 2 to 3 seconds to advance the logical address. Pressing it longer causes the address to increment continuously. The Logical Address Indicators display the logical address in binary. The logical address is stored in memory when dc power is removed.
Unit Selected Indicator	Indicates that the drive is selected by a controller.
START Switch/ Ready Indicator	The START switch has momentary action for Start and Stop, and it contains the Ready indicator. Pressing the START switch enables the power on sequence, and Ready indicator flashes (rapidly) until the disks are up to speed, the heads are loaded, and there are no fault conditions. The Ready indicator is on steady with power on complete.
	Pressing the START switch to release it from the Start position causes the Ready indicator to flash (slowly) until disk rotation has stopped. The current condition of the START switch (Start/ Stop) is stored in memory when dc power is removed.

TABLE 2-1. DRIVE SWITCHES AND INDICATORS (Contd)

Switch or Indicator	Function
OPERATOR PANEL OR STATUS/CONTROL PANEL (Contd)	
FAULT Indicator/ Fault Clear Switch	The FAULT indicator is inside the Fault Clear switch, and it lights if a fault exists within the drive. It is turned off by any of the following (provided that the error condition or conditions no longer exist): • Pressing the Fault Clear switch • Fault Clear command from the controller • A drive power on operation
WRITE PROTECT Switch/Indicator	The operation of the WRITE PROTECT switch or the WRITE PROTECT maintenance switch on the control board places the drive in the write protected mode (preventing write operations) and lights the WRITE PROTECT indicator. The current position of the WRITE PROTECT switch is stored in memory when dc power is removed.

AIR FILTER

The air filter is located behind the operator panel or status/
control panel, as shown in figure 2-2. The air filter should be
periodically inspected and either replaced or cleaned. Clean the
filter only if a replacement filter is not available. The filter
should be replaced about every six months in a computer room
environment; replace it more often in a dirtier location.

CAUTION

Be careful not to damage system cabling when
sliding drive in the drawer and drawer in and
out of rack.

1. Remove front panel insert from each drive (see figure
2-2).

NOTE

Release latch on left-hand drive locks 2X
drawer in rack. Release latch on right-hand
drive has no function.

2. Push 2X drawer release latch to the right and extend 2X
drawer to gain access to power supply.

3. Remove power from drive as follows:

For drives with operator panel or status/control panel:

a. Press START switch to stop drive.

b. Wait for Ready indicator (in START switch) to stop
flashing; then, set On/Standby switch on power
supply to Standby (0) position.

For drives without either panel, set On/Standby switch on
power supply to Standby (0) position.

NOTE

If an operator panel is used, ignore steps 4
and 7. Filter may be replaced with operator
panel in place.

4. Remove screws securing status/control panel to front
panel and move status/control panel away from front panel
to gain access to filter.

OPERATOR PANEL

OPERATOR PANEL

STATUS/CONTROL PANEL

FRONT PANEL

FILTER

STATUS/CONTROL PANEL

FRONT PANEL INSERT
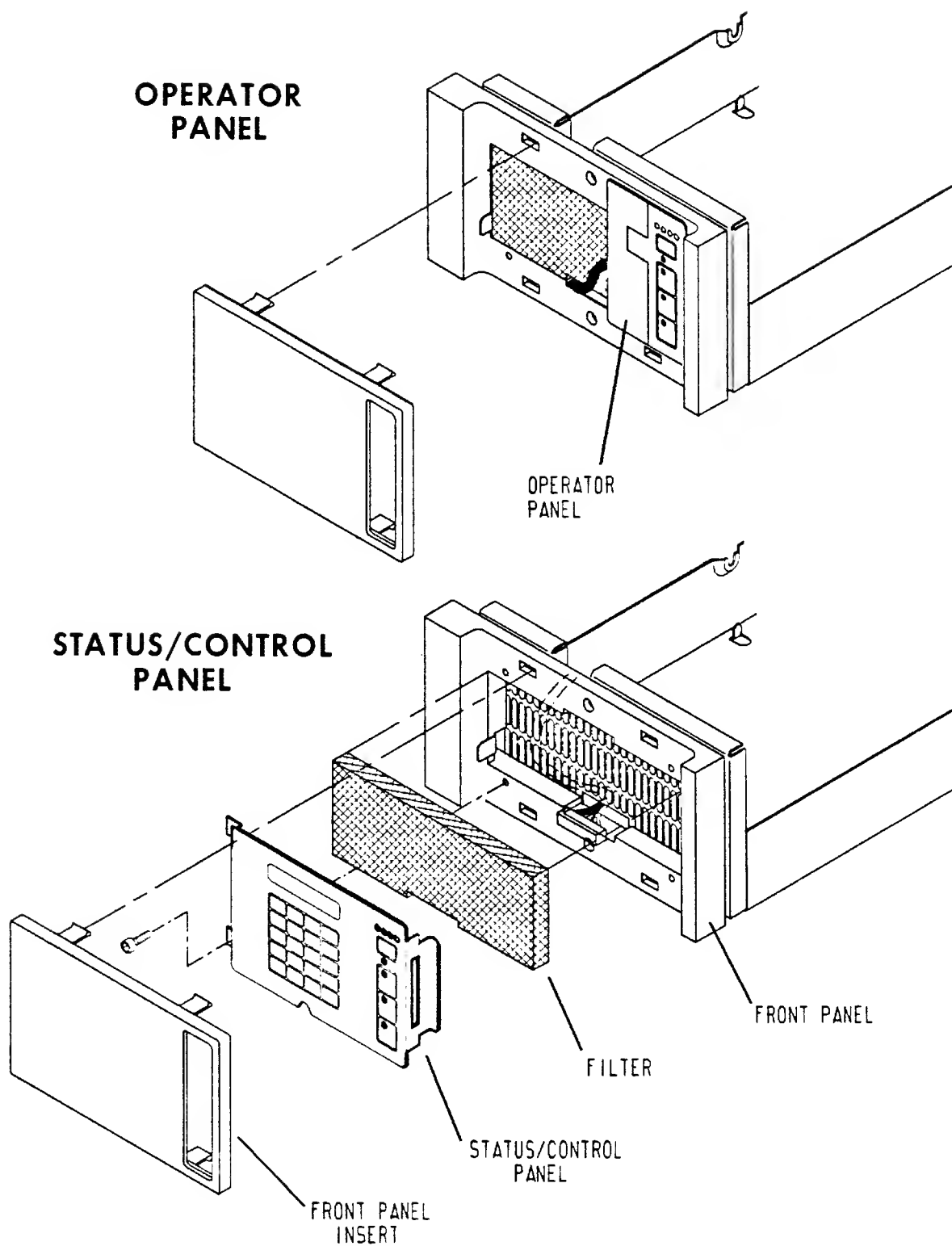
11F129A

Figure 2-2.   Air Filter Replacement

5. Remove dirty filter. If replacement filter is unavailable, clean dirty filter in solution of water and mild detergent. Rinse filter and allow it to dry.

6. Install clean filter.

7. Align status/control panel to front panel and secure with screws.

8. Set On/Standby switch on power supply to On (1) position.

9. Push 2X drawer back to closed position in rack.

10. Replace front panel insert.

OPERATING INSTRUCTIONS

For drives with no operator or status/control panel, there are no operating procedures. On these drives, when the R/L (Remote/Local) switch is placed in the Remote position, spindle power on/power off is handled by the controller. In Remote operation, the power on sequence is delayed. The length of delay is determined by the logical address number used, in increments of 5 seconds.

POWER ON PROCEDURE (DRIVES WITH OPERATOR PANEL OR STATUS/CONTROL PANEL)

This procedure describes how to turn on the drive. It is assumed that dc power is available to the drive because the power supply On/Standby switch is normally left in the On (1) position.

1. Press START switch to engage it in Start position.

   • If R/L (Remote/Local) switch on I/O board was set in Local position, power on sequence begins immediately.

   • If R/L (Remote/Local) switch on I/O board was set in Remote position, power on sequence continues when power sequence Pick or Hold (ground) signal is available from controller. With R/L (Remote/ Local) switch in Remote position, power on sequence to each drive is delayed. Length of delay is determined by logical address number used, in increments of 5 seconds.

     For example:
     Logical Address 0 = 0 second delay
     Logical Address 7 = 35 second delay

2. After delay is completed, observe that Ready indicator (located in START switch) flashes rapidly, indicating that power on is in progress.

3. Observe that Ready indicator lights steadily within 90 seconds, indicating that disks are up to speed and heads are loaded.

4. Ensure that FAULT indicator is off.

The power on sequence is now complete, and the drive is ready to receive commands from the controller.

POWER OFF PROCEDURE (DRIVES WITH OPERATOR PANEL OR STATUS/CONTROL PANEL)

This procedure describes how to turn off the drive.

1. Press START switch to release it from Start position to start power off sequence. If R/L (Remote/Local) switch is in Remote position, power down starts when sequence pick or hold is dropped by controller.

2. Observe that Ready indicator (located in START switch) flashes slowly, indicating that power off is in progress.

3. Observe that Ready indicator goes off within 60 seconds, indicating that power off is complete.

With power off complete, the heads are positioned in the landing zone and the disks are not rotating. Normally, the power supply On/Standby switch is left On (1) to continue supplying dc power to the drive.

SECTION 3

INSTALLATION AND CHECKOUT

INTRODUCTION

The information contained in this section describes installation and initial checkout of the drive.

SITE REQUIREMENTS

The site requirements considered are electrostatic discharge protection, environment, space, power, grounding, and interface.

ELECTROSTATIC DISCHARGE PROTECTION

All drive electronic assemblies are sensitive to static electricity, due to the electrostatically sensitive devices used within the drive circuitry. Although some of these devices such as metal-oxide semiconductors are extremely sensitive, all semiconductors as well as some resistors and capacitors may be damaged or degraded by exposure to static electricity.

Electrostatic damage to electronic devices may be caused by a direct discharge of a charged conductor, or by exposure to the static fields surrounding charged objects. To avoid damage to drive electronic assemblies, service personnel must observe the following precautions when servicing the drive:

- Ground yourself to the drive whenever the drive electronics are or will be exposed. Connect yourself to ground with a wrist strap (refer to accessories in parts data manual for part numbers). Connection may be made to any metal assembly. As a general rule, remember that you, the drive, and the circuit boards must all be at ground potential to avoid potentially damaging static discharges.

- Keep boards in conductive bags - when circuit boards are not installed in the drive, keep them in conductive static shielding bags (refer to accessories in parts data manual for part numbers). These bags provide absolute protection from direct static discharge and from static fields surrounding charged objects. Remember that these bags are conductive and should not be placed where they might cause an electrical short circuit.

- Remove boards from bags only when you are grounded - all boards received from the factory are in static shielding bags, and should not be removed unless you are grounded.

- Turn off power to drive before removing or installing any circuit boards.

- Do not touch pins on power supply connector J15. Power supply circuitry is sensitive to electrostatic discharge.

- Never use an ohmmeter on any circuit boards.

ENVIRONMENTAL REQUIREMENTS

All environmental requirements for the drive are listed in table 3-1.

TABLE 3-1. ENVIRONMENTAL REQUIREMENTS

Conditions	Characteristics	Specifications
TEMPERATURE		
Storage (Packaged)	Range	-10 to 50°C (14 to 122°F)
	Maximum change per hour	15°C (27°F)
Transit (Packaged)	Range	-40 to 60°C (-40 to 140°F)
	Maximum change per hour	20°C (36°F)
Table Continued on Next Page		

TABLE 3-1. ENVIRONMENTAL REQUIREMENTS (Contd)

Conditions	Characteristics	Specifications
TEMPERATURE (Contd)		
Operating	Range	10 to 45°C (50 to 113°F)
	Maximum change per hour	15°C (27°F)
RELATIVE HUMIDITY		
Storage (Packaged)	Range	5% to 95%
Transit (Packaged)	Range	5% to 95%
Operating	Range	20% to 80% (no condensation allowed).
Table Continued on Next Page		

TABLE 3-1.   ENVIRONMENTAL REQUIREMENTS (Contd)

Conditions	Characteristics	Specifications
BAROMETRIC PRESSURE (STANDARD DAY)		
Storage (Packaged)	Range	-305 m to 3000 m (-1000 ft to 10 000 ft) 104 kPa to 69 kPa (30 in to 20 in Hg)
Transit (Packaged)	Range	-305 m to 12 192 m (-1000 ft to 40 000 ft) 104 kPa to 19 kPa (30 in Hg to 6 in Hg)
Operating	Range	-305 m to 3000 m (-1000 ft to 10 000 ft) 104 kPa to 69 kPa (30 in Hg to 20 in Hg)

SPACE REQUIREMENTS

The drive and power supply mount side-by-side with another drive and power supply into a 2X drawer, and the 2X drawer slide mounts into a 483 mm (19 in) standard rack. The slide action allows outward extension of the drawer for ease of maintenance. The space requirements are shown in figure 3-1.

The combined mass of the drive and power supply is 18.4 kg (40.8 lb).

TOP VIEW

216 mm
8.50 in

374 mm
14.72 in

44 mm
1.72 in △1

TOP VIEW

210 mm
8.25 in

121 mm
4.75 in

FRONT VIEW

183 mm
7.2 in

△2

SIDE VIEW

POWER SUPPLY

DRIVE

121 mm
4.75 in △4

FRONT VIEW

567 mm
22.32 in

10 mm
0.40 in

SIDE VIEW
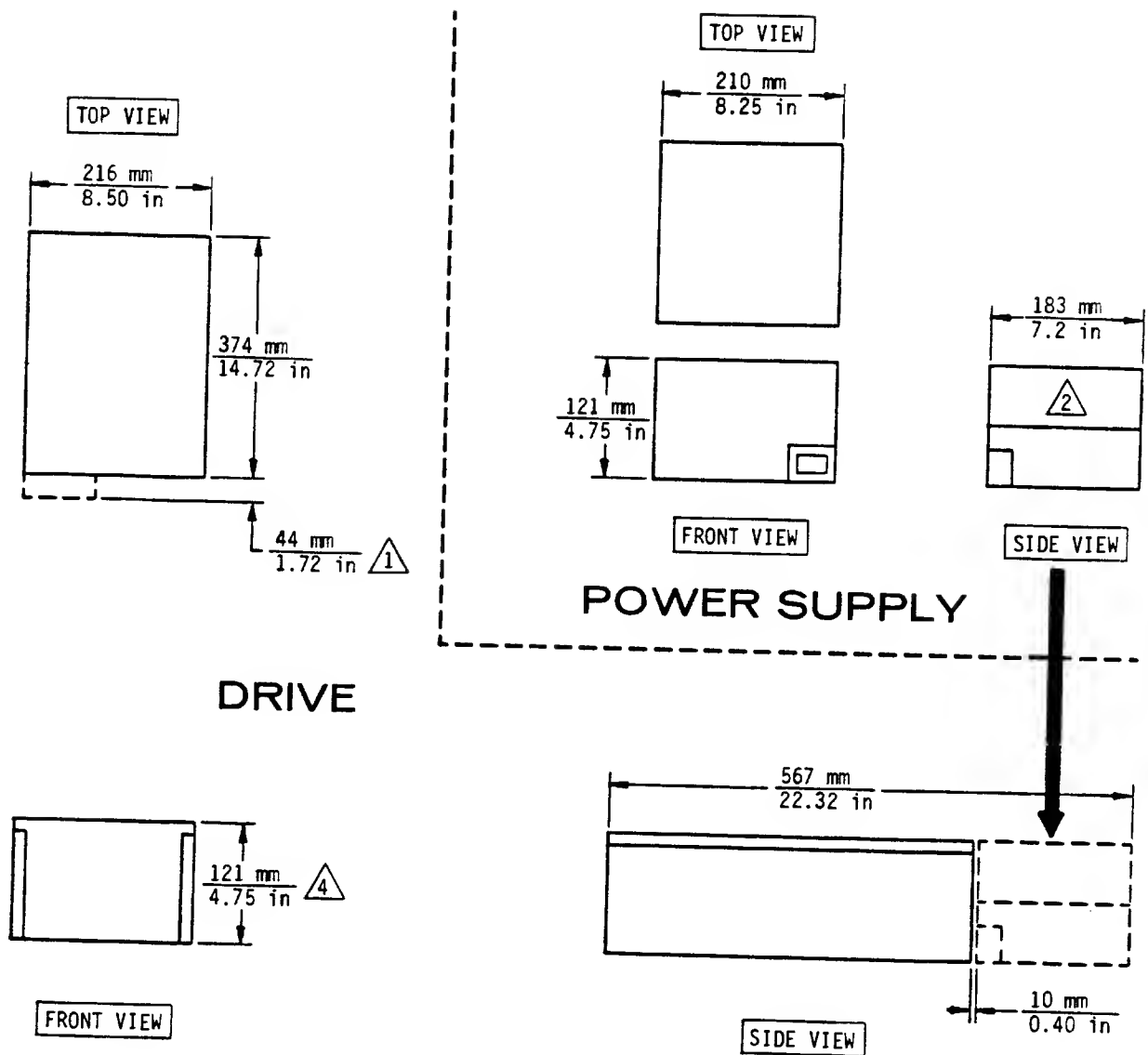
NOTES:

△1 COOLING FAN MOUNTS ON REAR PANEL
WHEN POWER SUPPLY IS NOT MOUNTED
IN LINE WITH DRIVE.

△2 COOLING FAN IS INSIDE POWER SUPPLY.

3. DIMENSIONS ARE NOMINAL.

△4 HEIGHT IS 136 mm (5.35 in) ON DRIVES
WITH VOLTAGE CONVERTER MOUNTED UNDER
TOP COVER.

11H95

Figure 3-1.   Drive Space Requirements

POWER REQUIREMENTS

```
      ┌──────────────┐
      │   WARNING    │
      └──────────────┘
```

This unit has a single phase power supply with
a capacitor input filter (sometimes called a
switching type supply). If power comes from a
3-phase, 4-wire, wye branch or feeder circuit,
ensure the circuit meets the latest
requirements of the United States National
Electrical Code. Failure to meet these
requirements may cause hazardous conditions
due to high currents and heating in the
neutral conductors and transformers supplying
the unit.

Drive ac power requirements are listed in table 3-2.
Conversion to the different line voltages is explained in the
installation procedures. Typical drive current versus start-up
time is shown in figure 3-2 for 100-120 and 208-240 volt
connections.

TABLE 3-2.   POWER REQUIREMENTS

Specifications	Nominal Values	
	100 – 120 V ac	208 – 240 V ac
Voltage Range	85 to 132 V	177 to 264 V
Nominal Line Frequency	50/60 Hz	50/60 Hz
Frequency Range	48.0 to 62.0 Hz	48.0 to 62.0 Hz
Phase Requirements	Single Phase	Single Phase
Power Consumed*	0.140 – 0.145 kW	0.143 – 0.147 kW
Line Current*	2.5 – 2.2 A	1.5 – 1.4 A
Power Factor*	0.57 – 0.55	0.46 – 0.44
Start Up Current	See figure 3-2.	See figure 3-2.

*Measured at nominal values when disks are rotating and
  carriage is moving.
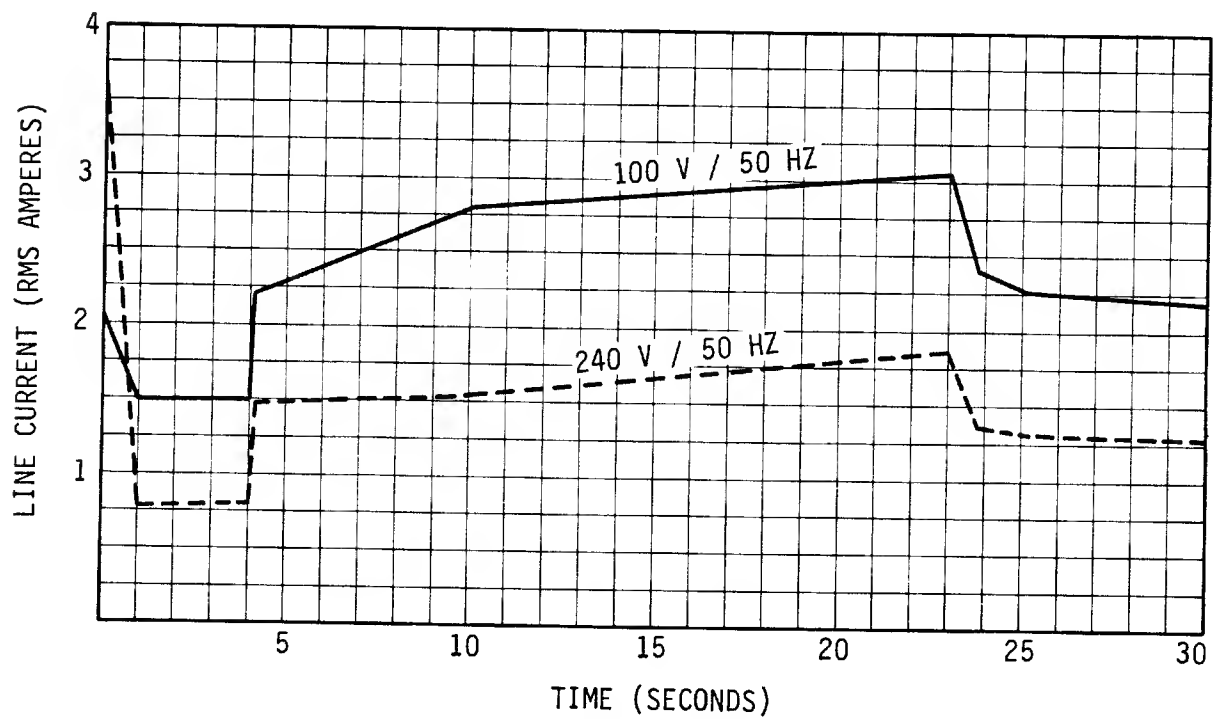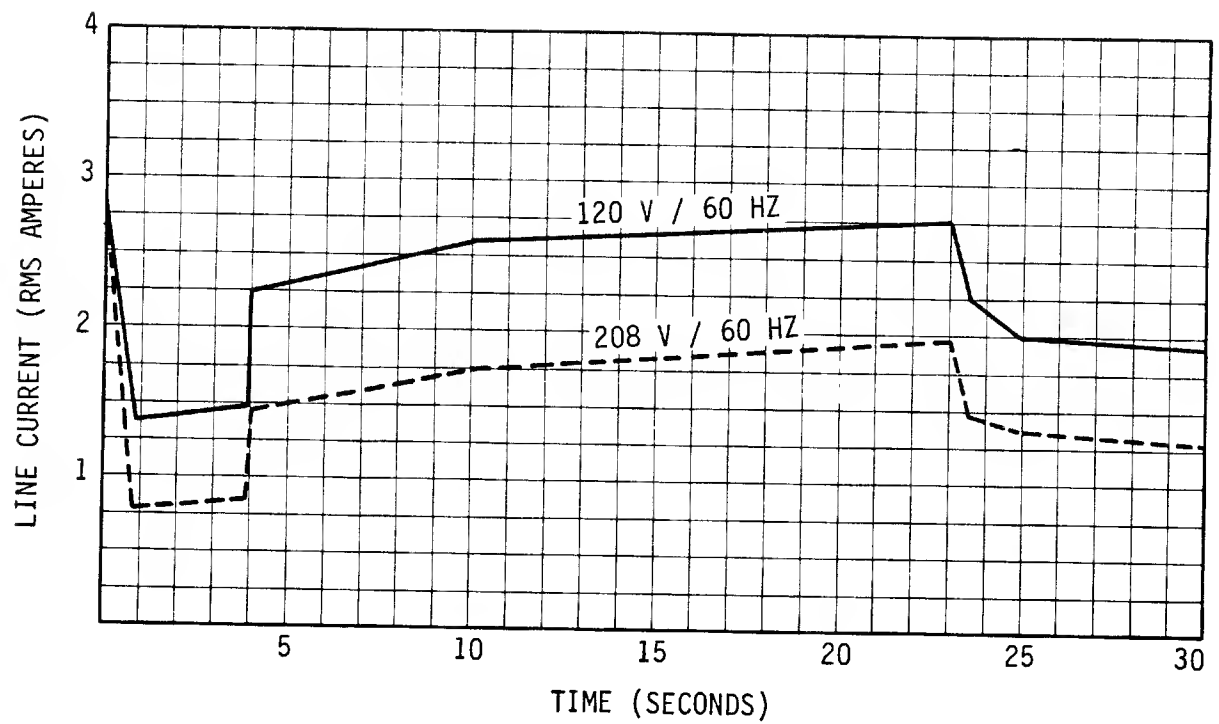
Figure 3-2.   Typical Line Current Versus Start-up Time

GROUNDING REQUIREMENTS

Safety grounding (connecting the drive power cord to a grounded outlet) and system grounding (establishing a common ground between the drives, the power supplies, and the controller) are discussed in the following paragraphs.

Safety Grounding

A safety ground must be provided by the site ac power system. The green (or green and yellow striped) wire in the drive's power cord provides the safety ground connection between the power supply and the site power system. In turn, the site ac power system must tie this connection (safety ground) to earth ground. All site ac power connection points, including convenience outlets for test equipment, must be maintained at the same safety ground potential.

System Grounding

In addition to safety grounding, system ground connections are also required. System ground is established by a set of ground straps connected in a star or daisy chain configuration. The ground straps connect ground on the controller to earth ground and to each drive in the system. The installation procedures in this section provide detailed grounding instructions and a schematic diagram of the star and daisy chain configurations.

INTERFACE REQUIREMENTS

An important part of site preparation is planning the layout and routing of I/O cables. The I/O cables are designated as A and B cables. The A cables may be connected in either a daisy chain (figure 3-3) or star (figure 3-4) configuration. Each configuration calls for the use of terminators.

The following discussion of the I/O configurations applies to single channel installations where a set of drives are interfaced to one controller. Extending the discussion to dual channel installations (involving two controllers) requires doubling the quantities of cables and terminators because the two channels have independent cabling.
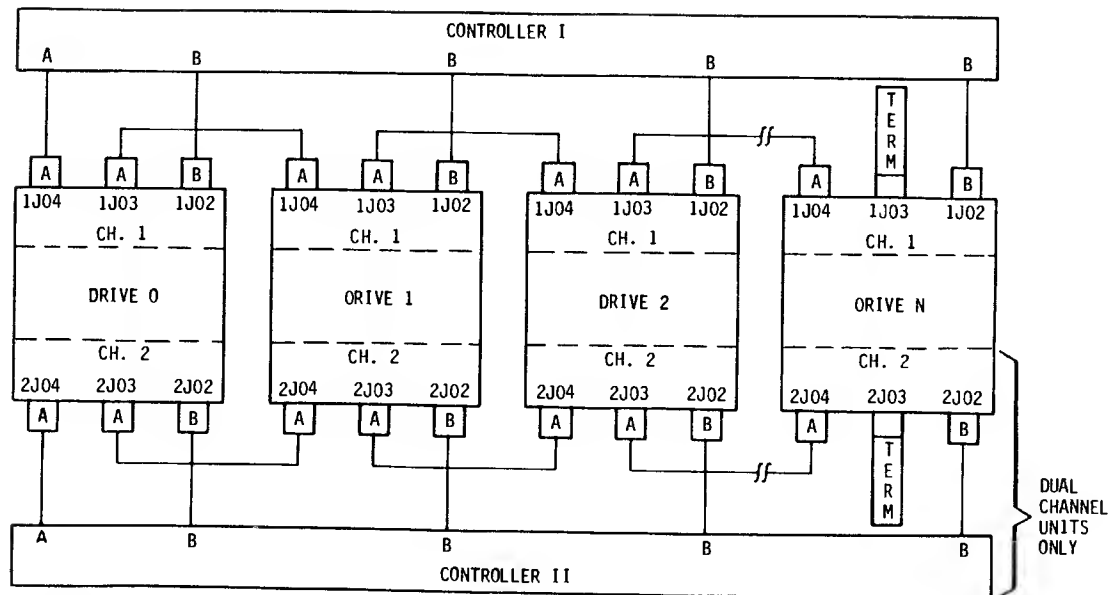
Figure 3-3. Daisy Chain Configuration

The daisy chain configuration has individual B cables going from the controller to each drive. However, a single A cable connects the controller to the first drive. Other A cables go from drive to drive. The last drive in the string has a terminator installed on it. Use this configuration if the controller has only one A cable connector to serve the entire drive string.
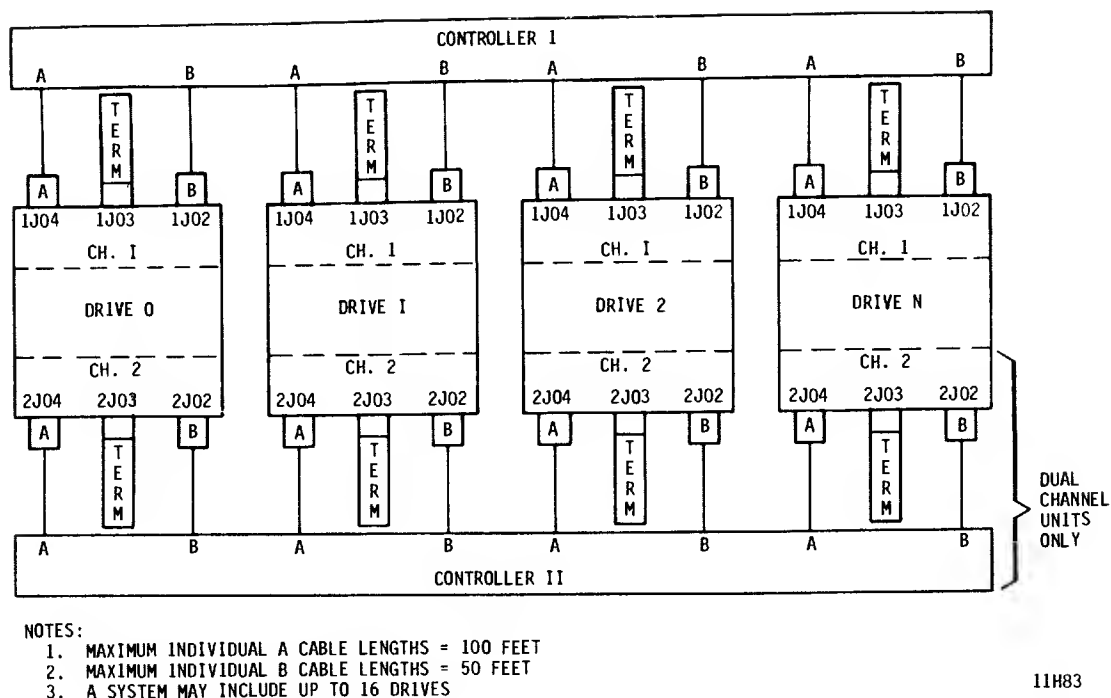
Figure 3-4. Star Configuration

The star configuration has individual A and B cables going from the controller to each drive. Each drive has a terminator installed on it. Use this configuration if the controller has a separate A cable connector for each drive.

In estimating the I/O cables needed for an installation, decide on the configuration that will be used and allow sufficient length to permit extension of rack-mounted drives. Limitations on I/O cable lengths may influence system layout. The maximum length for each B cable is 15.3 m (50 ft). Each star system A cable or the cumulative A cabling in a daisy chain system cannot exceed 30.6 m (100 ft) in length. Refer to accessories in parts data manual for terminator and I/O cable part numbers.

Figure 3-5 shows the pin assignments and signal names for the A cable. Figure 3-6 shows the pin assignments and signal names for the B cable. Detailed information about interface lines is given in the theory manual.

UNPACKAGING, INSPECTION AND REPACKAGING

After removing packaging material according to the unpackaging instructions provided with the drive, inspection for shipping damage should be carried out and several final unpackaging procedures performed. Save all packaging materials for future use.

UNPACKAGING

1. Open package (save all packaging materials).

2. If drive has a 2X drawer with slide mount option, remove packages containing drawer, two slide mounts and slide mount hardware kit.

3. Remove package containing ac power cable and dc power cable.

4. Open sealed vapor barrier bag and remove drive and power supply.

5. Check all items against shipping bill for required equipment and hardware to complete installation. Discrepancies, missing items, damaged equipment, etc., should be reported to the CDC account sales representative responsible for the equipment.

INSPECTION

Inspect the drive, power supply, and accessory items for possible shipping damage. All claims for shipping damage should be filed with the carrier involved.

CONTROLLER | LO, HI | DRIVE

Signal	LO, HI
UNIT SELECT TAG	22, 52
UNIT SELECT BIT 0	23, 53
UNIT SELECT BIT 1	24, 54
UNIT SELECT BIT 2	26, 56
UNIT SELECT BIT 3	27, 57
TAG 1	1, 31
TAG 2	2, 32
TAG 3	3, 33
BUS OUT BIT 0	4, 34
BUS OUT BIT 1	5, 35
BUS OUT BIT 2	6, 36
BUS OUT BIT 3	7, 37
BUS OUT BIT 4	8, 38
BUS OUT BIT 5	9, 39
BUS OUT BIT 6	10, 40
BUS OUT BIT 7	11, 41
BUS OUT BIT 8	12, 42
BUS OUT BIT 9	13, 43
OPEN CABLE DETECT	14, 44
BUS IN BIT 0	19, 49
BUS IN BIT 1	17, 47
BUS IN BIT 2	16, 46
BUS IN BIT 3	15, 45
BUS IN BIT 4	28, 58
BUS IN BIT 5	20, 50
BUS IN BIT 6	18, 48
BUS IN BIT 7	25, 55
SEQUENCE PICK IN/OUT	29
SEQUENCE HOLD	59
BUSY	21, 51
TAG 4	30, 60

ONE } TWISTED PAIR

NOTES:

1. DUAL CHANNEL UNITS ONLY

2. GATED BY UNIT SELECT

3. INDEX AND SECTOR MAY BE IN "A" CABLE, "B" CABLE, OR BOTH.

4. FUNCTIONS AS TAG 5 LINE FOLLOWING UNIT SELECTION.

5. FUNCTIONS AS CYLINDER ADDRESS BIT 2^{10} LINE, WHEN OPERATING WITH TAG 1 EXTENDED ADDRESSING FEATURE.

SMD-E SIGNAL DEFINITIONS

11F43

Figure 3-5. A Cable (Sheet 1 of 2)

CONTROLLER   LO, HI   DRIVE

UNIT SELECT TAG   22, 52
UNIT SELECT BIT 0   23, 53
UNIT SELECT BIT 1   24, 54
UNIT SELECT BIT 2   26, 56
UNIT SELECT BIT 3   27, 57
TAG 1   1, 31
TAG 2   2, 32
TAG 3   3, 33
BIT 0   4, 34
BIT 1   5, 35
BIT 2   6, 36
BIT 3   7, 37
BIT 4   8, 38
BIT 5   9, 39
BIT 6   10, 40
BIT 7   11, 41
BIT 8   12, 42
BIT 9   13, 43
OPEN CABLE DETECT   14, 44
RESERVED FOR INDEX   18, 48
RESERVED FOR SECTOR   25, 55
FAULT   15, 45
SEEK ERROR   16, 46
ON CYLINDER   17, 47
UNIT READY   19, 49
ADDRESS MARK   20, 50
WRITE PROTECTED   28, 58
SEQUENCE PICK IN/OUT   29
SEQUENCE HOLD   59   ONE
BUSY   21, 51   } TWISTED PAIR
RESERVED FOR SMD-E   30, 60

NOTES:

1. DUAL CHANNEL UNITS ONLY

2. GATED BY UNIT SELECT

3. INDEX AND SECTOR MAY BE IN "A" CABLE,
   "B" CABLE, OR BOTH.

4. FUNCTIONS AS CYLINDER ADDRESS BIT 2^{10} LINE WHEN OPERATING
   WITH TAG 1 EXTENDED ADDRESSING FEATURE.

SMD-O   SIGNAL DEFINITIONS

11F71

Figure 3-5.   A Cable (Sheet 2)
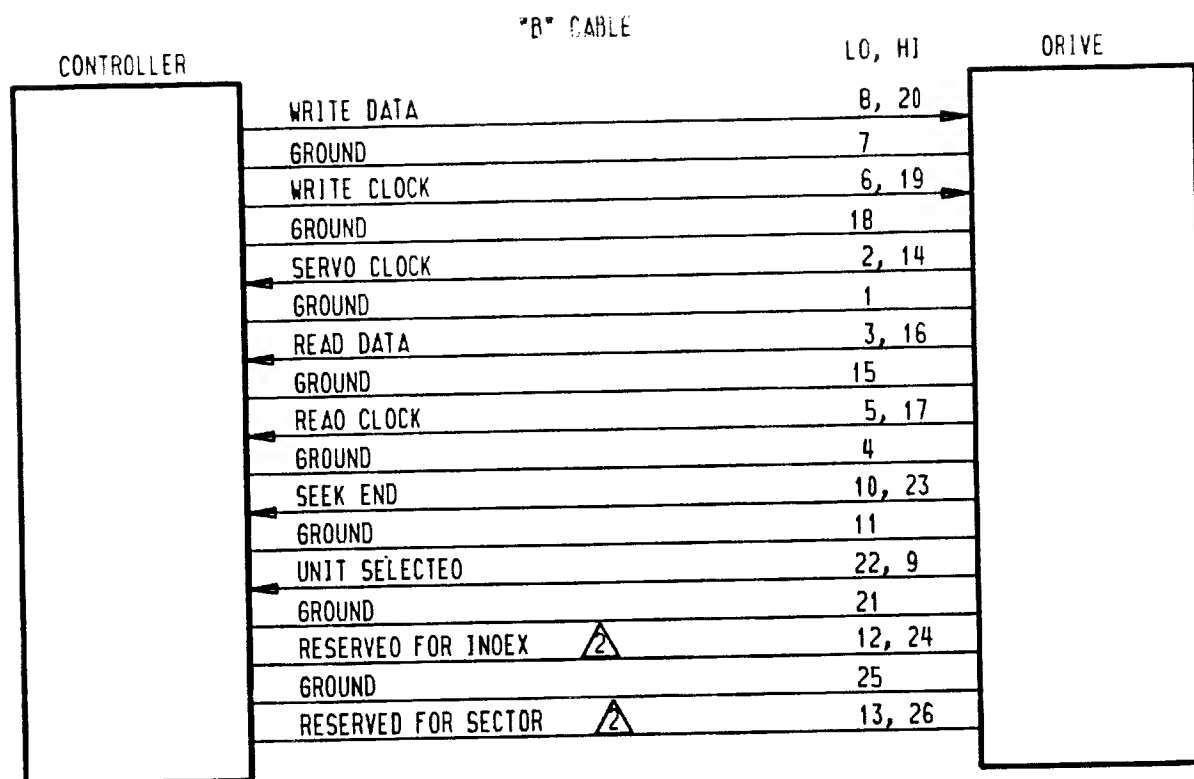
Figure 3-6. B Cable

REPACKAGING

If it is necessary to ship the drive, repackage the drive with the original packaging materials (saved during installation). Comply with the manufacturer's packaging instructions to ensure that the drive will be undamaged in shipment. To obtain packaging instructions, contact:

> Packaging Engineer, Material Services Dept.
> Normandale Division, MPI
> 7801 Computer Ave
> Minneapolis, MN 55435

When ordering packaging instructions, specify the exact equipment number and series code of the drive as shown on the equipment identification label.

INSTALLATION PROCEDURES

GENERAL

With the site requirements completed and the drive unpackaged, you are ready to begin the installation. Certain parts of the installation may vary -- how the drive and power supply are mounted, how dc power is supplied to the drive, and whether an operator panel or status/control panel is used. For those installations where the drive and power supply are mounted in a 2X drawer, the following procedures apply:

- Mounting 2X Drawer in Rack

- Mounting Front Panel

- Installing Operator Panel or Status/Control Panel Jumper Cable

- Mounting the Status/Control Panel

- Mounting the Operator Panel

- Mounting Drive and Power Supply in 2X Drawer

For some customers, the drive, power supply, and operator panel (if used) are mounted in an inner drawer prior to shipment. In this case, the following procedures apply:

- Mounting 2X Drawer in Rack

- Mounting Drive and Power Supply in 2X Drawer

For those installations where a 2X drawer is not used, the topic Alternate Methods for Installing the Drive provides some basic information. However, specific details of alternate mounting are beyond the scope of this manual.

There is another group of procedures that apply to all installations. They are:

- Power Supply Voltage Conversion

- System I/O Cabling

- System Grounding

- Circuit Board Switches and Indicators

In most cases, you will find it convenient to perform the procedures in the order they are presented in the manual. However, you might find it convenient to make switch settings on both the drive and the power supply before mounting them.

POWER SUPPLY VOLTAGE CONVERSION

The power supply is configured before shipment to operate in one of two ac input voltage ranges. The voltage select plate on the power supply (see figure 3-7) indicates the voltage range selected prior to shipment. The voltage range is determined by setting the voltage select switch to the desired range.

1. Ensure that ac power cable is disconnected from power supply.

CAUTION

Power supply will fail if voltage select is set for low range and a voltage in the high range is applied.

2. Remove screw securing voltage select plate to power supply and remove plate from power supply. Retain plate and hardware.

NOTES:

LOCKS VOLTAGE SWITCH IN EITHER 115V POSITION OR 230V POSITION (OTHER SIDE)

115 V

230 V

VOLTAGE SELECT PLATE

ON/STANDBY SWITCH (ON = 1 STANDBY = 0)

VOLTAGE SELECT SWITCH (115V OR 230V)

IIF47B
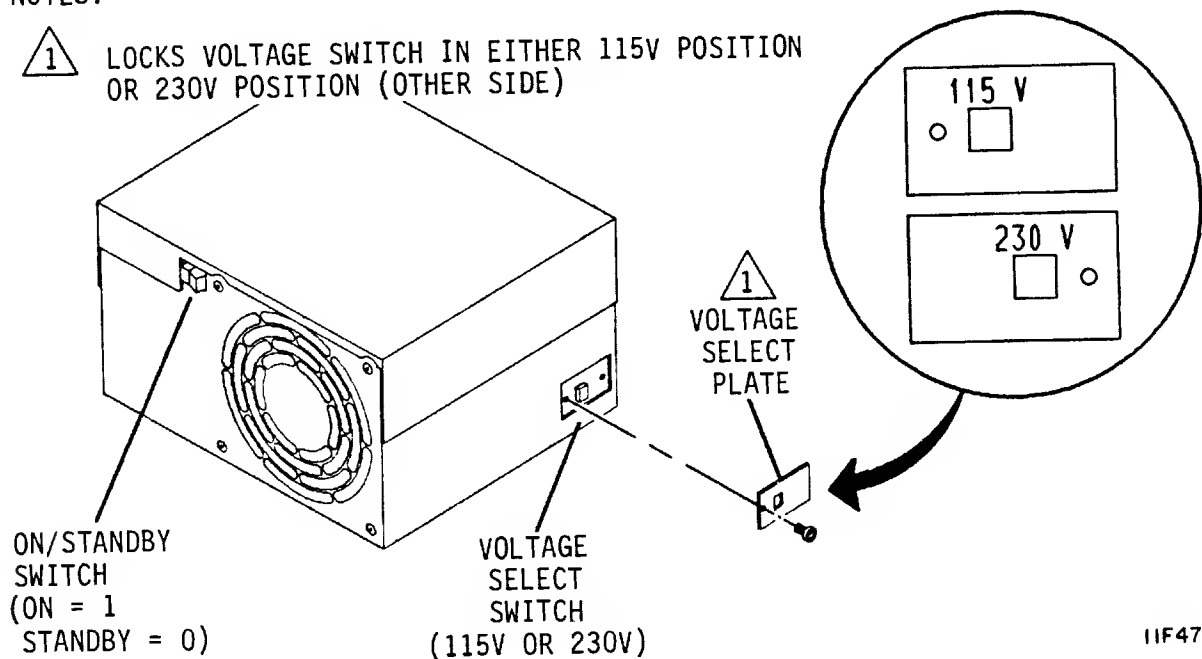
Figure 3-7. Power Supply Voltage Conversion

3. Set voltage select switch to desired range.

4. Reverse voltage select plate and install plate on power supply to lock switch in desired range.

5. Replace existing ac power cable with ac power cable specified for new operating voltage.

The ac power cord must be replaced if the voltage range is changed. Refer to figure 3-8 and to the parts data manual for information about ordering the replacement ac power cable.

SAFETY GROUND

115V - 60 Hz

NEUTRAL

PHASE

SAFETY GROUND

230V - 50 Hz

PHASE

NEUTRAL

SAFETY GROUND

240V - 60 Hz

NEUTRAL

PHASE
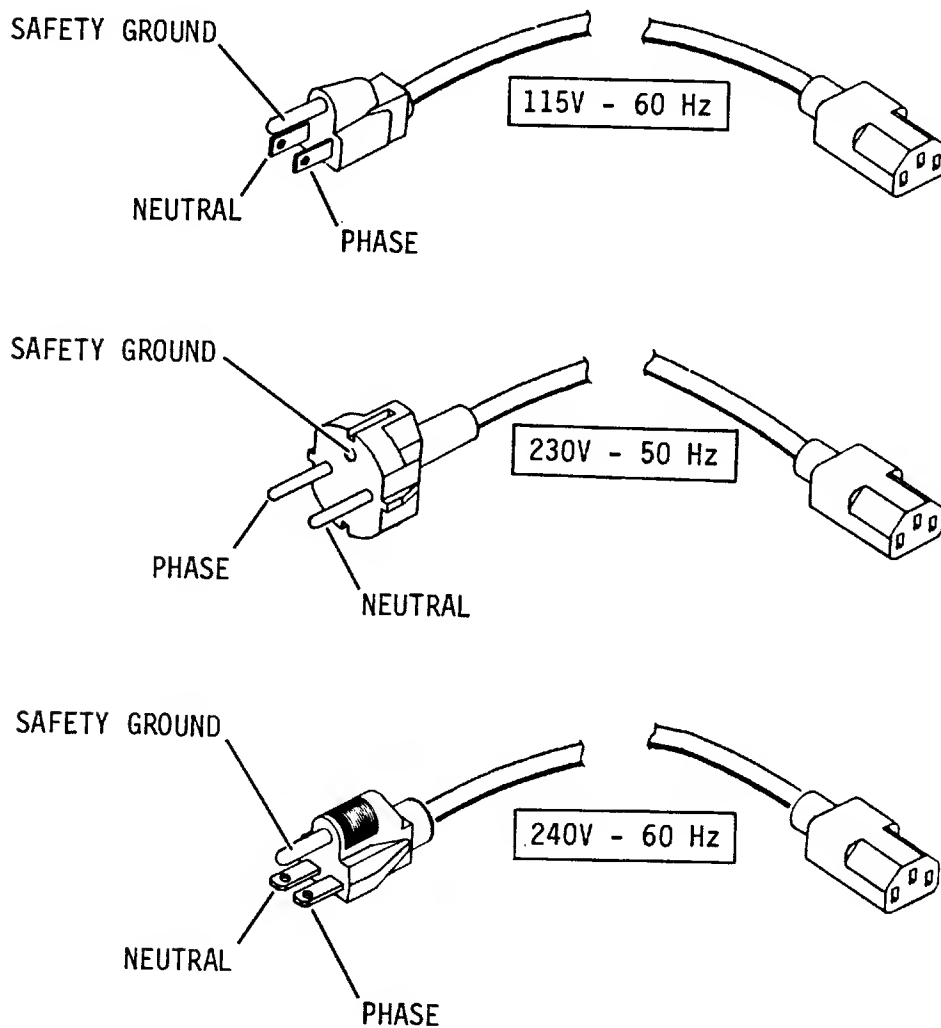
IIH94A

Figure 3-8.   AC Power Cables

MOUNTING 2X DRAWER IN RACK

The slide assemblies permit inline mounting of the 2X drawer in a rack. The drawer may be extended out the front surface of the rack for maintenance. The following procedure provides instructions for attaching the 2X drawer to the rack.

1. Remove screws from rack mounting kit. There are four smaller screws in kit. Two screws attach slide adjusting brackets to slides (step 2). Two others attach inner drawers to 2X drawer (see Mounting Drive and Power Supply in 2X Drawer).

2. Loosely attach a slide adjusting bracket to each slide with a bracket clamp and screw (see figure 3-9).

3. Loosely attach screws and nut plates (for each slide) to rack as follows (see figure 3-9):

   ● For rack front, screws go in top and third holes.
   ● For rack rear, screws go in top and bottom holes.

4. Set slide adjusting brackets as required for proper rack depth. Mount right-hand and left-hand slides in rack in accordance with user requirements. Orient slides so that 2X drawer rests on flat edge of slides as shown in figure 3-9.

5. Secure adjusting brackets to slides and slides to rack.

6. Lift drawer and guide it into slide assemblies. Continue pushing until drawer is in rack. Ensure that there is no binding when sliding 2X drawer in and out of rack.

If it is necessary to remove drawer from rack, slide drawer out to full extension. Press drawer locking springs and remove drawer from rack.

ROLLED
EDGE

SLIDE

2X DRAWER

FLAT
EDGE

DRAWER LOCKING
SPRING

SLIDE

DRAWER LOCKING
SPRING

BRACKET
CLAMP

SLIDE ADJUSTING
BRACKET

FRONT

NUT PLATE

DRAWER LOCK SLOT

RACK
(FRAME)
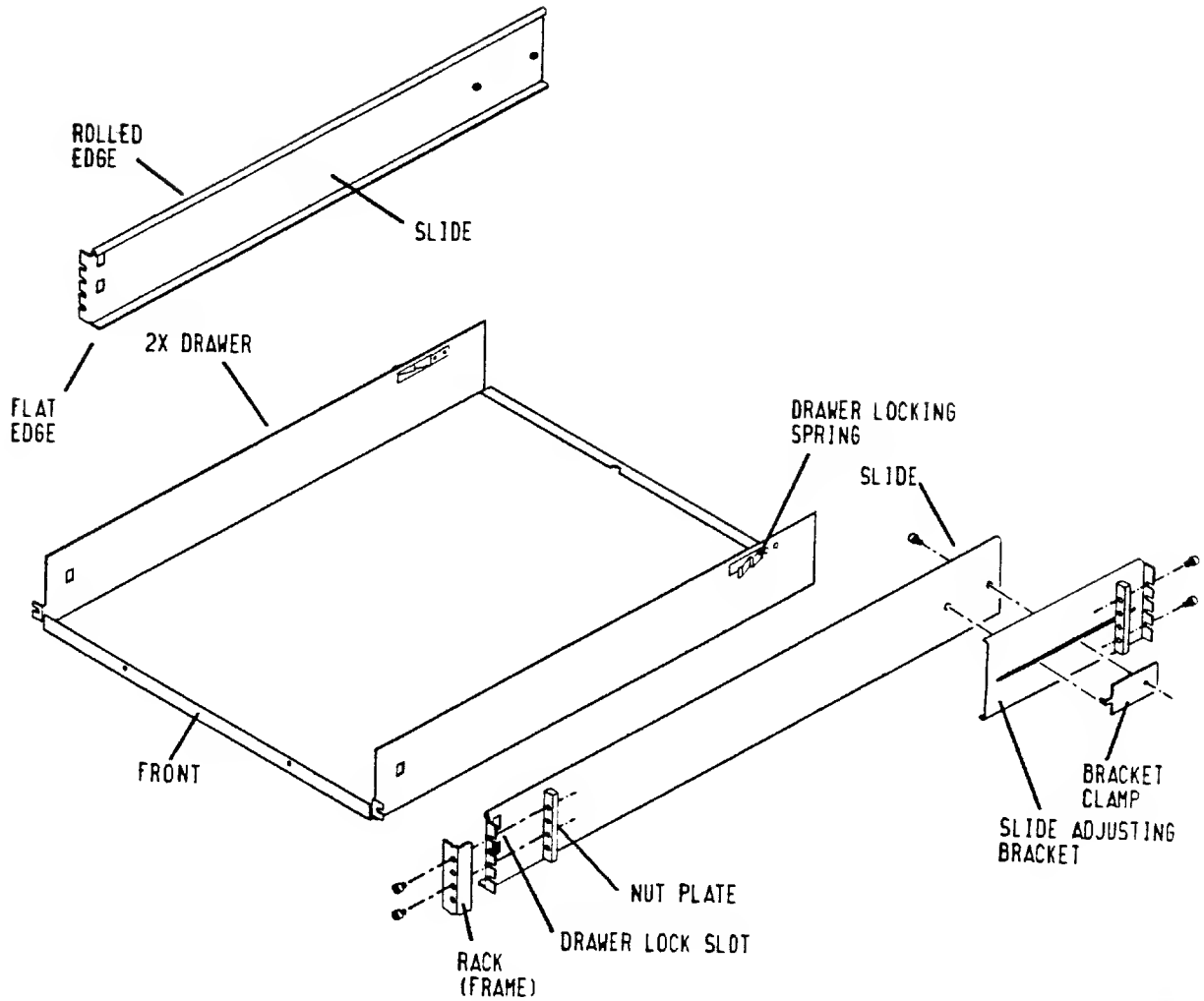
11F46A

Figure 3-9.   2X Drawer Installation

MOUNTING FRONT PANEL

If an operator panel or status/control panel will be installed, skip this procedure and go on to the next procedures, which include front panel mounting instructions.

NOTE

When installing front panel, ensure that overhang (wide edge) covers rack frame (vertical support).

1. Align top edge of front panel to top edge of inner drawer (see figure 3-10).

2. Secure front panel into place with four screws.

3. Install filter.

4. Remove adhesive backing and attach filler plate to front panel insert.

5. Install front panel insert.

INNER DRAWER

FILTER

FRONT PANEL

FILLER
PLATE
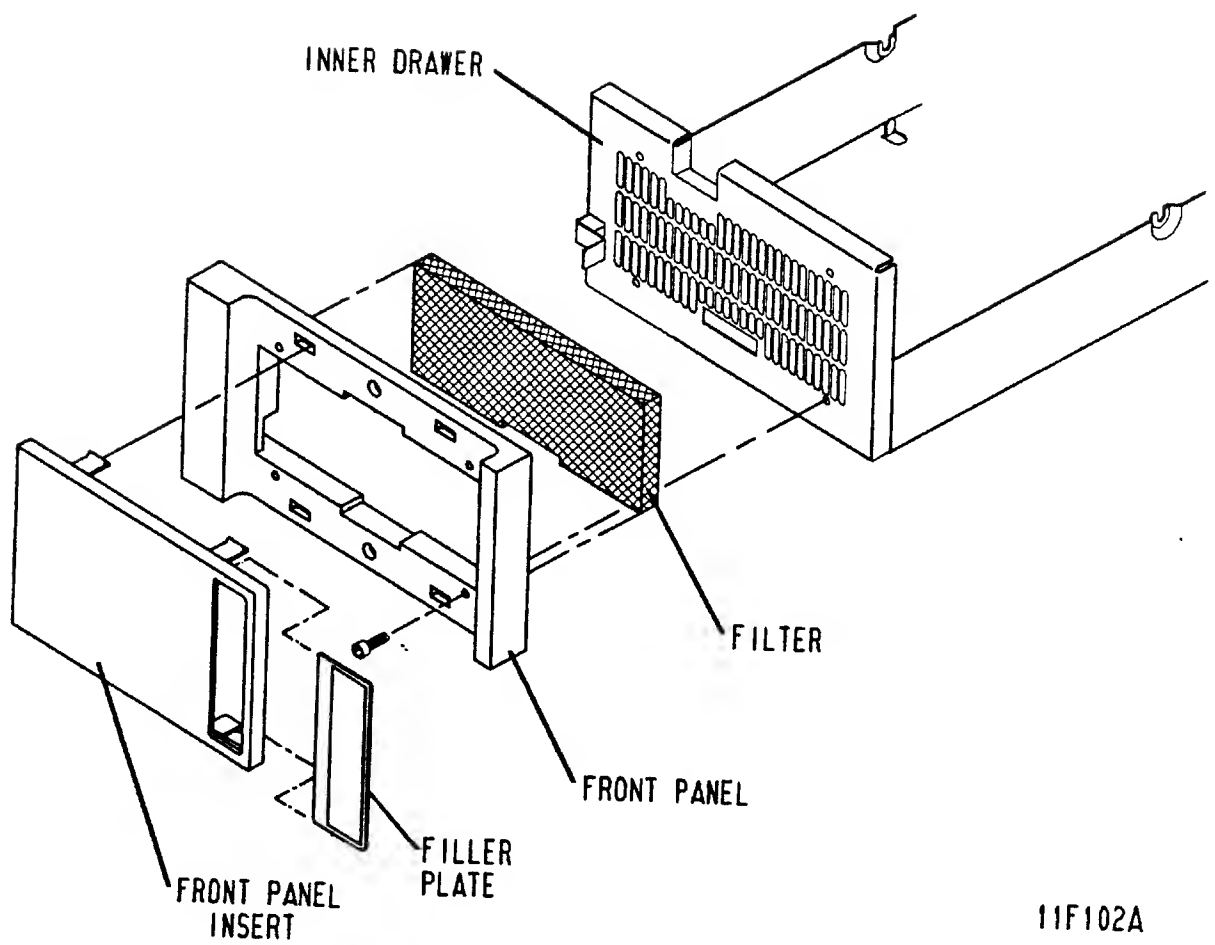
FRONT PANEL
INSERT

11F102A

Figure 3-10. Mounting Front Panel

INSTALLING OPERATOR PANEL OR STATUS/CONTROL PANEL JUMPER CABLE

During a new installation, installing the jumper cable is quite
simple as nothing has been mounted in the inner tray. However,
to install the jumper cable in an existing installation, the
drive and power supply must be removed from the inner drawer.
This requires you to remove the inner drawer from the 2X drawer.

New Installation

1. Attach two metal cable clamps (found in operator panel
   kit or status/control panel kit) to exposed shielding on
   jumper cable. One cable clamp is longer than the other.
   Attach longer cable clamp to J13 end of jumper cable and
   shorter cable clamp to P13 end of jumper cable.

2. Attach cable clamp at P13 end of jumper cable to inner
   drawer using a screw and lockwasher. See figure 3-11.

3. Route jumper cable around left side of inner drawer.
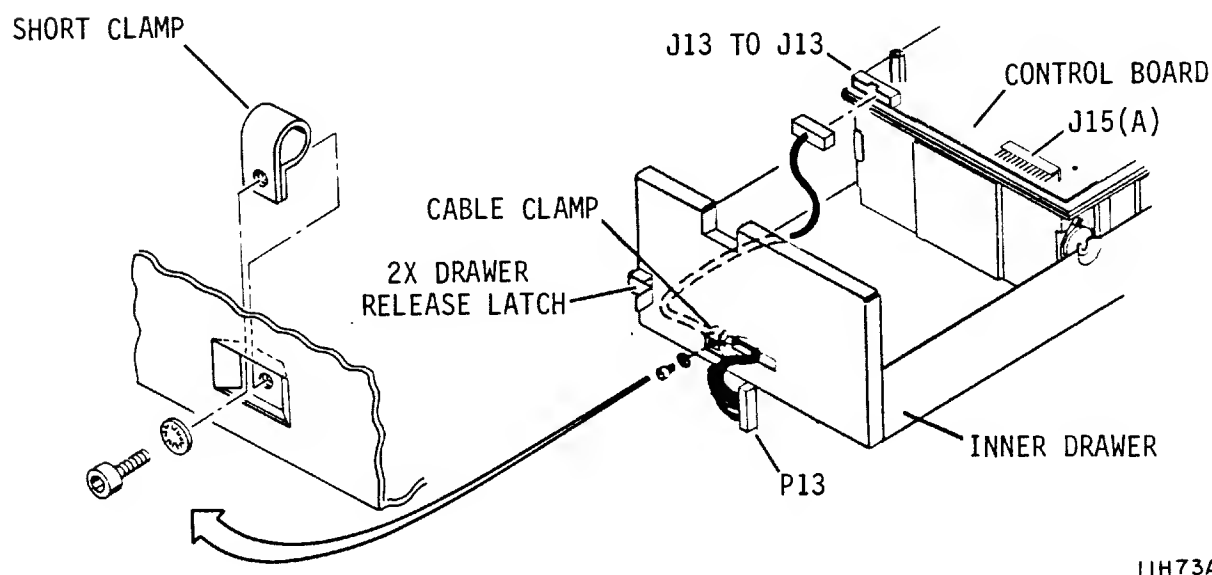
Figure 3-11. Installing Jumper Cable

Existing 2X Drawer Installation

1. Remove front panel insert from each drive.

2. Remove filter.

NOTE

The release latch on left-hand drive locks 2X drawer in rack. The release latch on right-hand drive has no function.

3. Push 2X drawer latch to the right and extend 2X drawer to fully extended position. See figure 3-11.

4. Set On/Standby switch on power supply to Standby (0) position.

5. Push 2X drawer back to closed position in rack.

NOTE

Do not remove strain relief clamp from cable bracket.

6. Remove I/O cover and grounding clamp from I/O cable bracket.

CAUTION

Remove terminators by hand. They could be damaged if a pliers or other tool is used.

7. Disconnect I/O cables, terminators, and system ground strap from drive.

8. Remove I/O cable bracket from drive rear panel.

9. Disconnect ac power cable from site power.

10. Push 2X drawer release latch to the right and extend 2X drawer to fully extended position.

11. Remove inner drawer locking screw.

12. Push 2X drawer release latch to the right, lift inner drawer up and remove it from 2X drawer. Place inner drawer on work table.

13. Loosen shock mount screws securing module to inner drawer.

14. Lift front end of drive up enough to disconnect dc power cable from J15(A) on control board.

15. Disconnect dc ground strap from module.

16. Carefully lift drive out of drawer and move to desired location.

17. Remove screws securing power supply to inner drawer.

18. Disconnect ac power cable from ac input connector J1 while removing power supply from inner drawer.

19. Remove front panel from inner drawer.

20. Attach two metal cable clamps (found in operator panel kit or status/control panel kit) to exposed shielding on jumper cable. One cable clamp is longer than the other. Attach longer cable clamp to J13 end of jumper cable and shorter cable clamp to P13 end of jumper cable.

21. Attach cable clamp at P13 end of jumper cable to inner drawer using a screw and lockwasher. See figure 3-11.

22. Route jumper cable around left side of inner drawer.

23. Perform procedure to mount either status/control panel or operator panel on front surface of inner drawer.

NOTE

Because this is not a new installation, some of the steps in the following procedure are already done.

24. Perform procedure for mounting drive and power supply in 2X drawer.

25. Attach I/O cable bracket to drive rear panel.

26. Connect I/O cables, terminators, and system ground strap to drive.

27. Attach grounding clamp and I/O cover to I/O cable bracket.

28. Push 2X drawer latch to the right and extend 2X drawer far enough to set On/Standby switch on power supply to On (1) position.

29. Push 2X drawer back to closed position in rack.

Mounting The Status/Control Panel

Refer to figure 3-12 and perform the following steps to install an operator panel:

NOTE

When installing front panel, ensure that overhang (wide edge) covers rack frame (vertical support).

1. Align front panel to inner drawer so that holes in front panel are centered on holes in inner drawer.

2. Secure front panel into place with two screws on right side of front panel.

3. Install filter.

4. Connect jumper cable to P13 on status/control panel.

5. Align status/control panel to front panel and secure with screws.

6. Remove protective film from front surface of status/control panel.
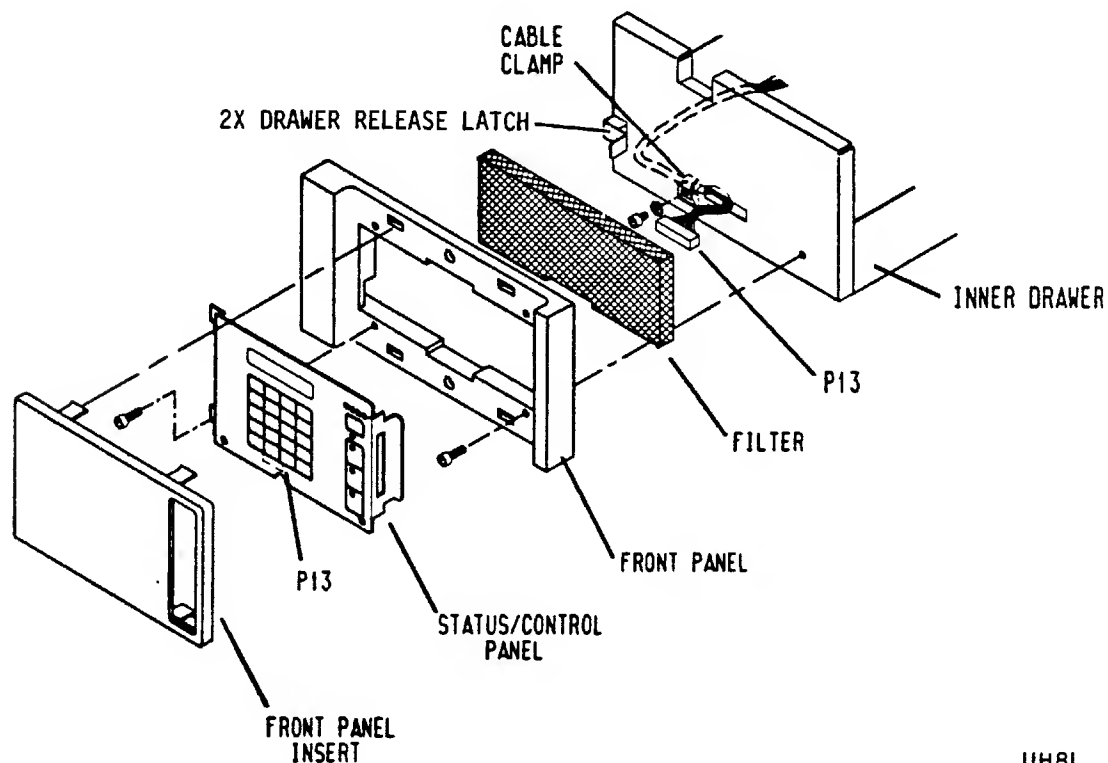
Figure 3-12. Mounting the Status/Control Panel

Mounting The Operator Panel

Refer to figure 3-12 and perform the following steps to install an operator panel:

NOTE

When installing front panel, ensure that overhang (wide edge) covers rack frame (vertical support).

1. Align front panel to inner drawer so that holes in front panel are centered on holes in inner drawer.

2. Secure front panel into place with two screws on left side of front panel.

3. Install filter.

4. Remove screws attaching operator panel to shield.

5. Align shield to front panel and secure with screws.

6. Connect jumper cable to P13 on operator panel.

7. Align operator panel to shield and secure with screws.
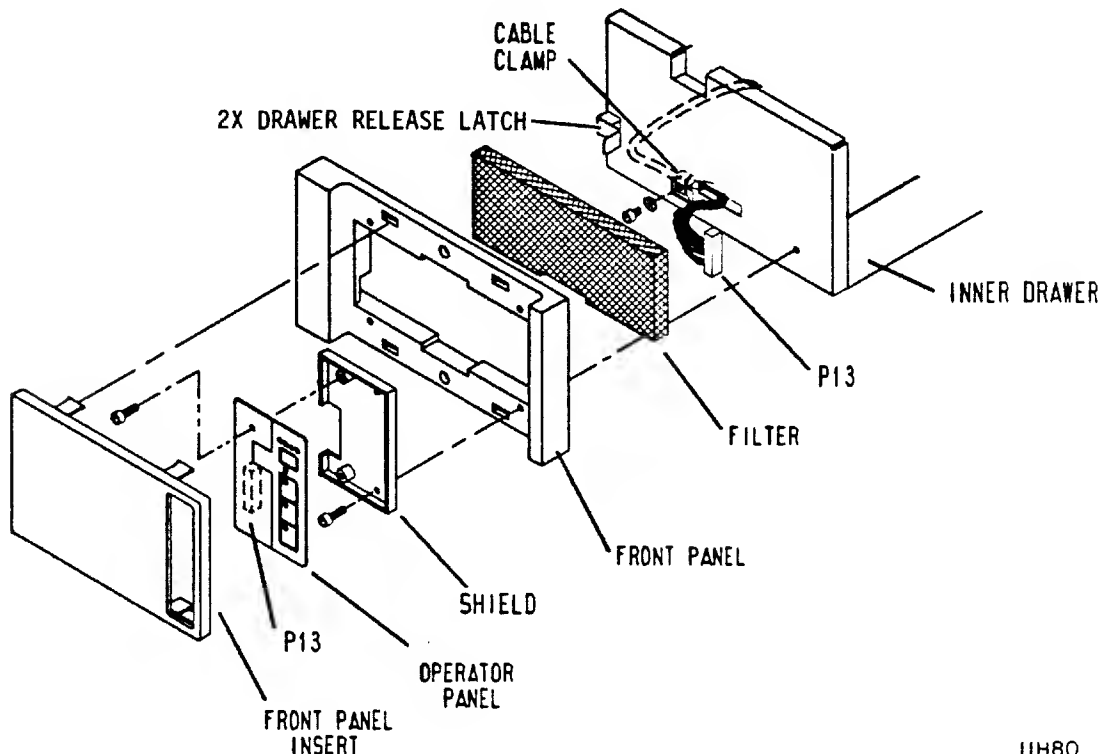
Figure 3-13. Mounting the Operator Panel

MOUNTING DRIVE AND POWER SUPPLY IN 2X DRAWER

You may find it convenient to make normal switch settings on the drive and power supply (described later in this section) before mounting them in the 2X drawer. See figure 3-14.

If your drive and power supply were mounted in the inner drawer prior to shipment, skip to step 11 of this procedure.

NOTE

For drives with an operator panel or status/control panel, ensure that P13 jumper cable does not interfere with power supply mounting. Cable is routed around left side of power supply (see figure 3-11).

1. Place power supply into position in inner drawer and secure with screws.

2. Connect dc power cable to J15 on power supply.

3. Orient ground strap as shown in figure 3-14, and connect ground strap to ac ground terminal on power supply. Ensure that lock washer is placed between ground strap and power supply case.

4. Connect ac power cable to ac input connector J1 on power supply. Route cable inside inner drawer as shown in figure 3-14.

5. Loosely attach shock mount screws to drive shock mounts.

6. Mount drive to inner drawer so that drive is supported on shock mount screws.

7. Lift front end of drive up enough to connect dc power cable to J15(A) on control board.

8. To complete installation of status/control panel or operator panel jumper cable, perform the following steps:

   a. Attach cable clamp at J13 end of jumper cable with screw in hole just above left front shock mount. See figure 3-14. Ensure that lock washer is placed between clamp and module.

   b. Lift front end of drive up enough to connect jumper cable end marked J13 to J13 on control board.

9. Attach ground strap to drive module. See figure 3-14.

Figure 3-14.   Mounting Drive and Power Supply in 2X Drawer

10. Tighten shock mount screws to secure drive in place.

11. Slide inner drawer into position in 2X drawer and secure with locking screw.

12. Push 2X drawer back to closed position in rack.

13. Replace front panel insert.

14. Connect ac power cable to site power.

ALTERNATE METHODS FOR INSTALLING THE DRIVE

Any alternate method of mounting the drive in an enclosure must satisfy certain requirements regarding mechanical isolation and air flow. The mounting design must support the drive by its shock mounts, either horizontally or vertically. It must allow adequate clearance between the drive and any surfaces near the drive. The mounting design must also ensure adequate ventilation of the drive and power supply. Detailed mounting requirements are given in the drive's product specification. Before actually mounting the drive and power supply in the enclosure, you may find it convenient to set their switches for normal operation.

When the power supply mounting is remote from the drive, a shielded dc power cable is recommended. Figure 3-15 shows how the cable connects to the power supply and the drive. One end of the cable connects to J15 on the power supply, and the trailing ground lead on that end connects to the ac ground terminal on the power supply. The other end of the cable goes to J15(B) on the drive. The trailing ground lead on that end connects to the ground screw below the I/O connectors.

When the power supply is mounted remotely, an optional auxiliary fan and rear panel may be installed to provide air circulation for the drive. See figure 3-15. The fan kit has the fan mounted so the airflow arrow (on the body of the fan) will point toward the drive. This blows cooling air through the drive and is the preferred method. If, however, the installation requires it, the fan may be reversed so that the airflow arrow points away from the drive. This draws warm air out of the drive.

DO NOT TOUCH PINS ON CONNECTOR J15.
POWER SUPPLY CIRCUITRY IS SENSITIVE
TO ELECTROSTATIC DISCHARGE.

IIH74A
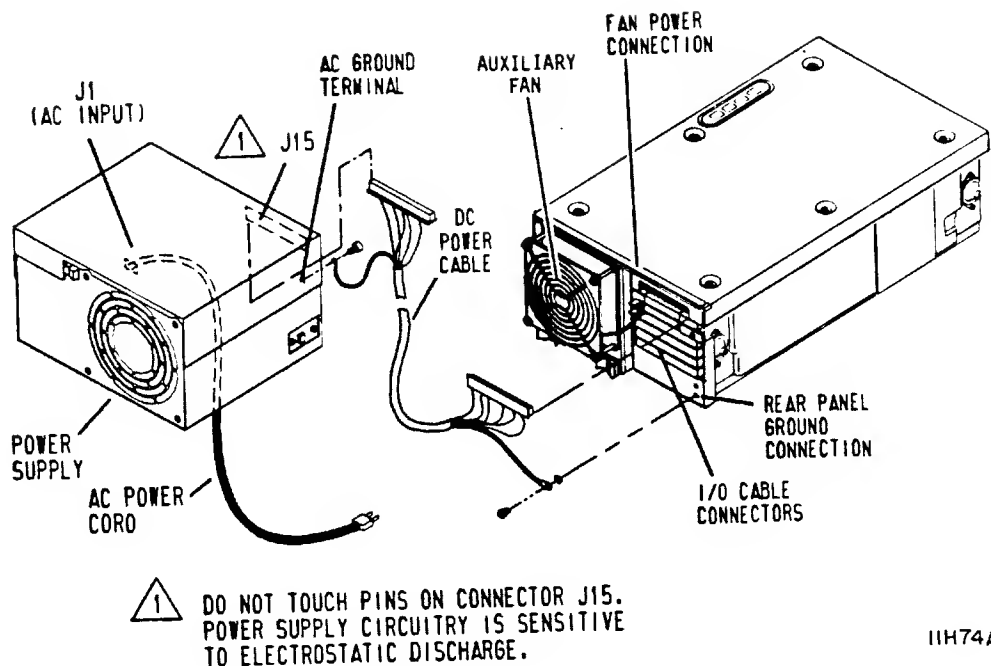
Figure 3-15. Cabling for a Remote Power Supply

Some drives operate from a power source supplying -12 V, +5 V, and +24 V. They contain a voltage converter that develops an additional supply voltage of -5 V from the -12 V input. As shown in figure 3-16, these drives have two dc power connectors, CN9 and CN10, located side-by-side above the I/O connectors. Following the directions provided with the power supply, connect the two dc power cables from the supply to CN9 and CN10. The following list provides pin assignments for these connectors:

Connector	Pin Number	Signal
CN9	1	+5 V
	2	+5 V
	3	+24 V return
	4	+24 V return
	5	+24 V
	6	Key
	7	+24 V
CN10	1	-12 V return
	2	Key
	3	-12 V return
	4	-12 V
	5	-12 V
	6	+5 V return
	7	+5 V return
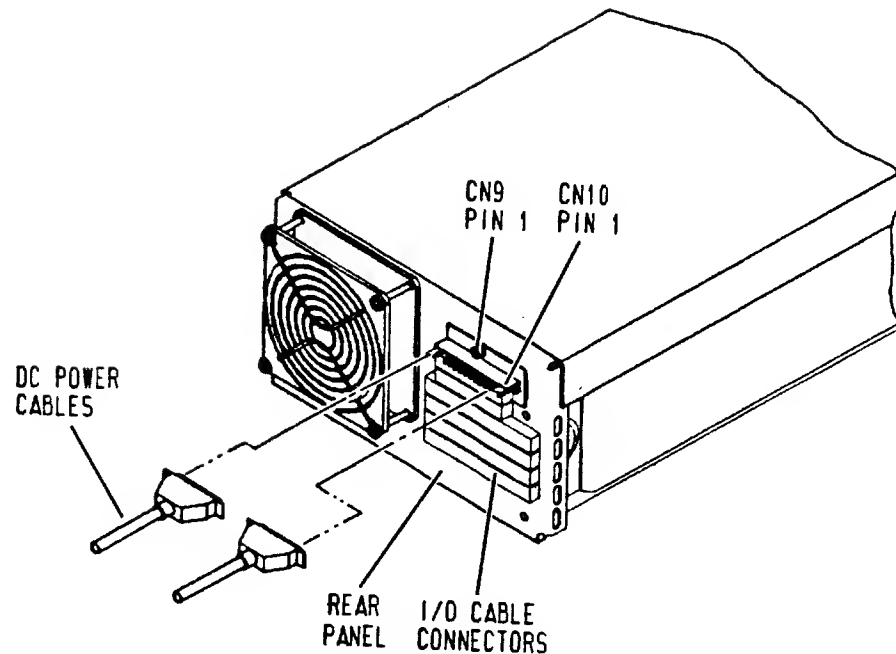
Figure 3-14.   Cabling for a Drive with a Voltage Converter

SYSTEM I/O CABLING

It assumed that the site has been prepared in accordance with the site requirements information provided earlier in this section.   The following procedures describe how to cable the system in either a daisy chain or star configuration.   These configurations were discussed earlier in this section under Interface Requirements.

The following procedures make the connections for one I/O channel.   For dual channel installations, part of the procedure must be repeated.   On dual channel drives there are two sets of I/O connectors: 1J02, 1J03, and 1J04 for channel 1, and 2J02, 2J03, and 2J04 for channel 2.   The recommended connections are A cable to J04 and terminator to J03.   These connections may be reversed without affecting drive operation.   Figure 3-16 shows typical I/O cable connections.
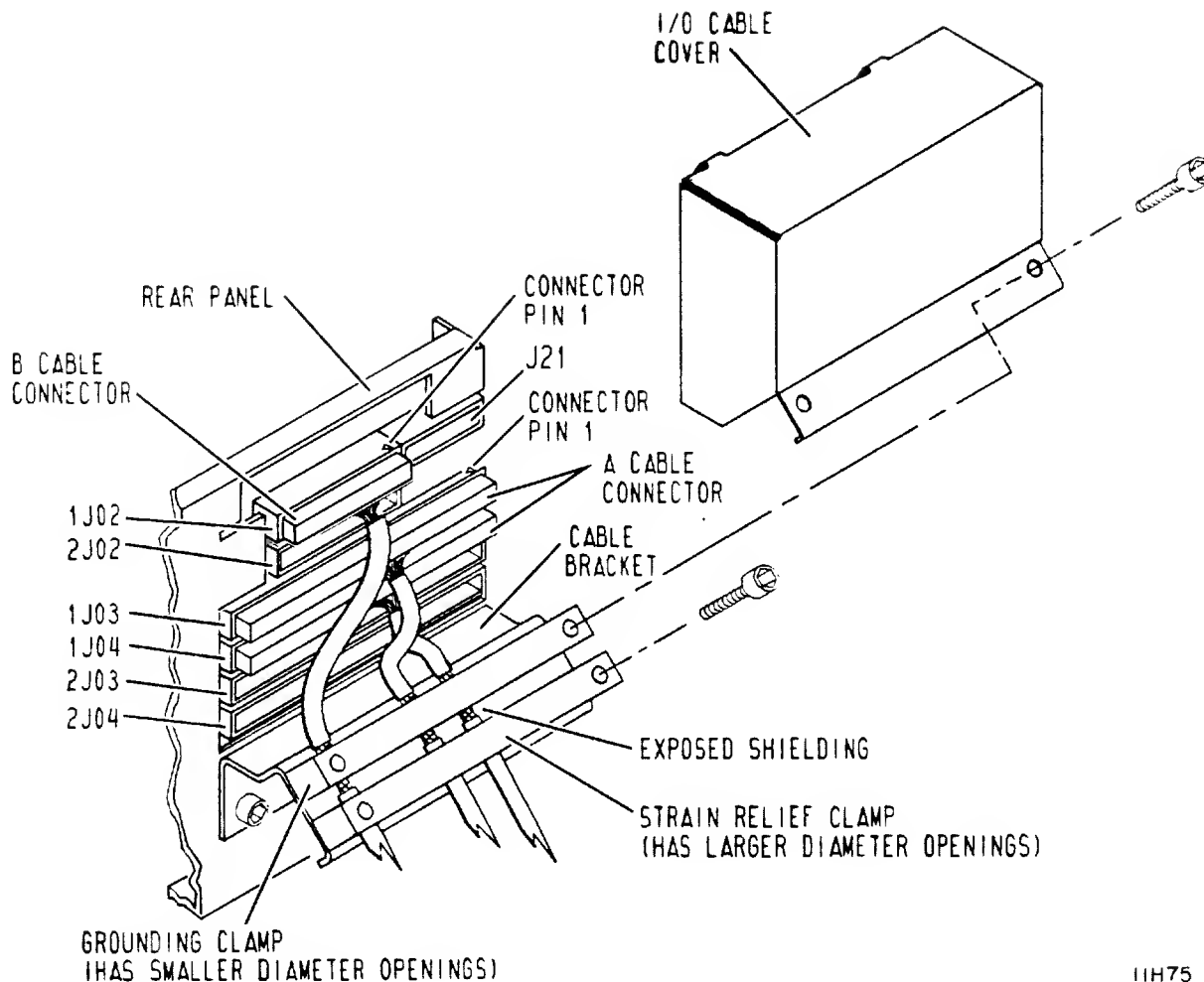
Figure 3-16. I/O Cable Attachment

Daisy Chain I/O Cabling Procedure

1. Attach cable bracket to rear panel, using two shorter screws found in hardware kit.

    NOTE

    Steps 2 through 5 apply to single channel drives and must be repeated for dual channel drives.

2. Connect B cables from controller to connector J02 on each drive.

3. Connect A cable from controller to connector J04 on first drive in daisy chain.

NOTE

If drive is not last drive in daisy chain, repeat step 4 until last drive is connected. When last drive is connected in daisy chain, perform step 5.

4. Connect another A cable from connector J03 to connector J04 on next drive in daisy chain.

5. Install terminator on drive connector J03 and make terminator ground connection (see figure 3-17). A terminator is required on last drive in a daisy chain system.

NOTE

In the next step it is important that heat shrink be removed to expose ground shield only where it contacts the grounding clamp.

6. Strip heat shrink tubing from all cables so that bare shielding will be in contact with grounding clamp. See figure 3-16.

7. Loosely install strain relief clamp (strain relief clamp has larger diameter openings than grounding clamp) onto cable bracket with cables positioned as shown in figure 3-16.

8. Position cabling so that bare shielding begins just above strain relief clamp; then secure strain relief clamp into place with screws. This will ensure that grounding clamp (installed in following step) is in contact with bare shielding of cabling.

9. Install grounding clamp and I/O cable cover onto cable bracket with cables positioned as shown in figure 3-16 and secure with screws. Ensure that bare shielding on each cable is in contact with grounding clamp.
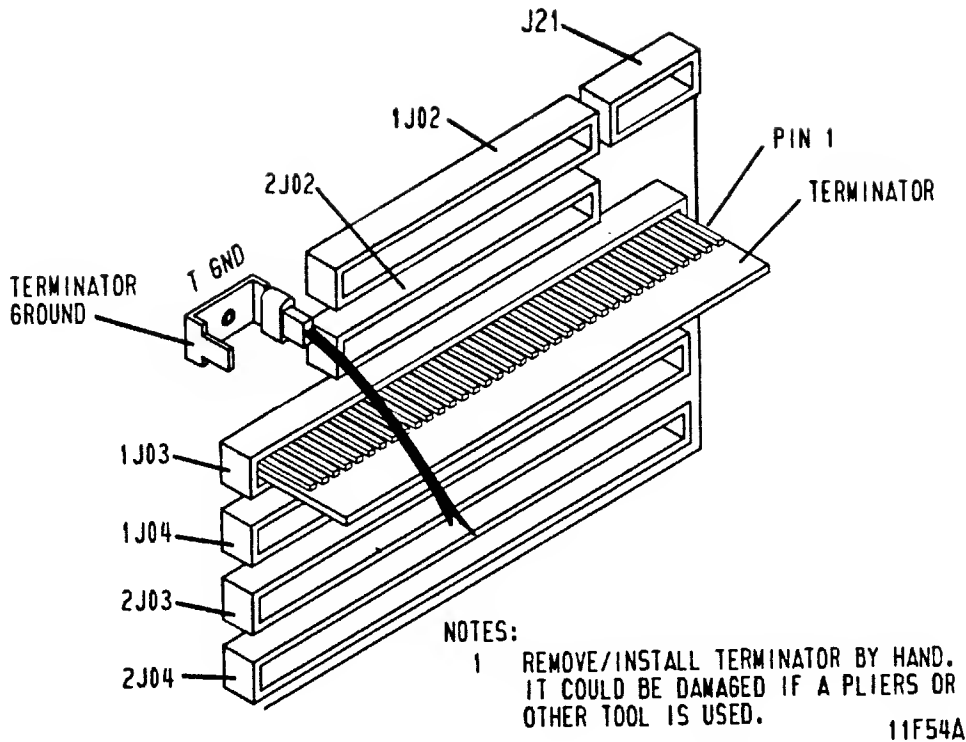
Figure 3-17.   Terminator Installation (Typical)

Star I/O Cabling Procedure

1.   Attach cable bracket to rear panel, using two shorter
     screws found in hardware kit.

NOTE

     Steps 2 through 4 apply to single channel
     drives and must be repeated for dual channel
     drives.

2.   Connect B cables from controller to connector J02 on each
     drive.

NOTE

     Repeat steps 3 and 4 for each drive in star
     system.

3.   Connect an A cable from controller to drive connector J04.

4.   Install terminator on drive connector J03 and make
     terminator ground connection (see figure 3-17).
     Terminators are required on all drives in a star system.

NOTE

In the next step it is important that heat shrink be removed to expose ground shield only where it contacts the grounding clamp.

5. Strip heat shrink tubing from all cables so that bare shielding will be in contact with grounding clamp. See figure 3-16.

6. Loosely install strain relief clamp (strain relief clamp has larger diameter openings than grounding clamp) onto cable bracket with cables positioned as shown in figure 3-16.

7. Position cabling so that bare shielding begins just above strain relief clamp; then secure strain relief clamp into place with screws. This will ensure that grounding clamp (installed in following step) is in contact with bare shielding of cabling.

8. Install grounding clamp and I/O cable cover onto cable bracket with cables positioned as shown in figure 3-16 and secure with screws. Ensure that bare shielding on each cable is in contact with grounding clamp.

SYSTEM GROUNDING

This section contains instructions on grounding the system to the drive. It is assumed that the site has been prepared in accordance with the site requirements information provided earlier in this section. The following procedures describe how to ground the system in a star or daisy chain configuration as shown in figure 3-18. Refer to accessories in parts data manual for part numbers of grounding accessories.

Interconnect cabling is supplied with each drive and installed on site, between case ground on each drive and case ground on its power supply. Refer to mounting drive and power supply procedure in this section for instructions on attaching ground cable between drive and power supply.

DAISY CHAIN CONFIGURATION   STAR CONFIGURATION
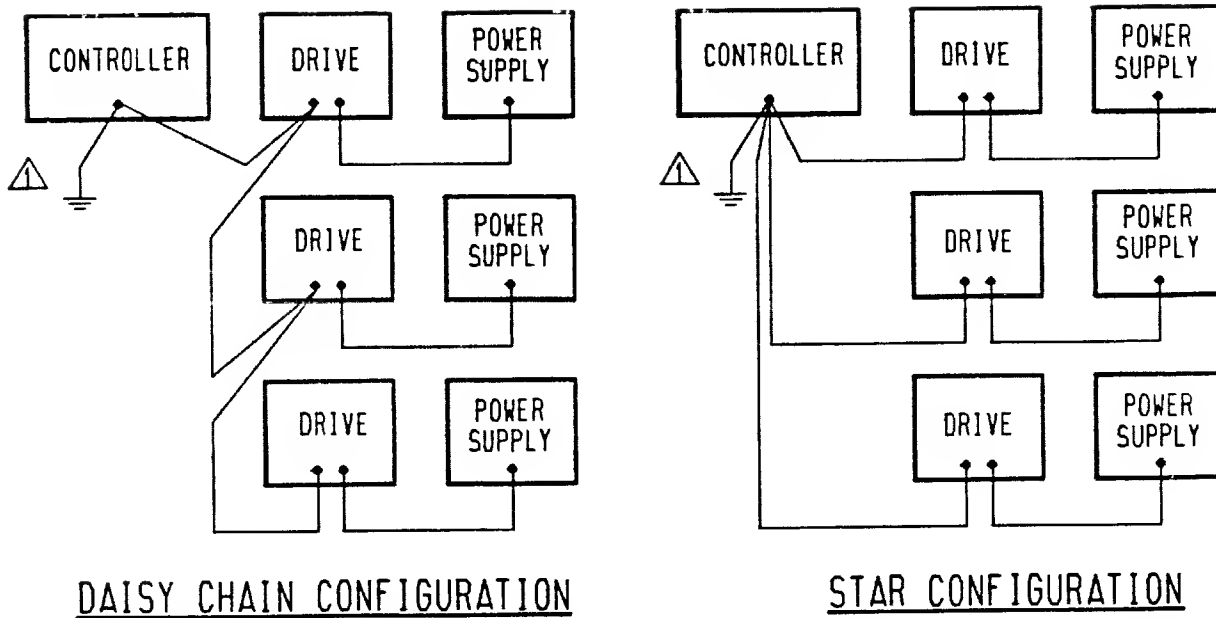
NOTES:

⚠ EARTH GROUND CONNECTION

11F55

Figure 3-18.   System Grounding Diagram

Star Grounding Procedure

In this configuration, ground straps connect the controller ground to each drive in the system as shown in figure 3-18.

1. Prepare ground straps as follows:

    a. Allowing sufficient length for drive extension, cut ground straps to length needed for following connections:

    ● Controller to earth ground

    ● Controller to each drive

    b. Crimp and solder terminal lugs to both ends of each ground strap.

2. Referring to figure 3-18, connect ground straps to controller as follows:

   a. Connect one end of each ground strap to controller ground terminal.

   b. Connect one of the ground straps to earth ground.

   c. Route remaining ground straps to drives.

3. Connect a ground strap from controller to each drive as follows:

   a. Remove screw and lockwasher from system ground terminal (DC GND) on each drive. See figure 3-19.

   b. Attach system ground strap to drive ground terminal. Ensure that lockwasher is between ground strap and ground terminal.
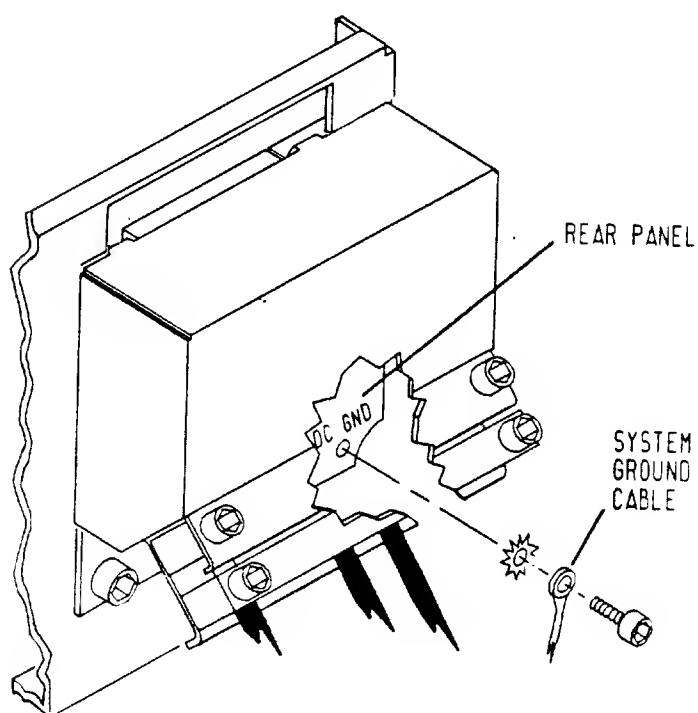
Figure 3-19. System Grounding

Daisy Chain Grounding Procedure

In this configuration, a ground strap connects the controller
ground to the first drive in the system. The remainder of the
drives are connected by grounding straps going from the first
drive to the second, the second to the third, and so on. See
figure 3-18.

1. Prepare ground straps as follows:

    a. Allowing sufficient length for drive extension, cut
       ground straps to length needed for following
       connections:

       • Controller to earth ground

       • Controller to nearest drive

       • Each drive to next drive in daisy chain

    b. Crimp and solder terminal lugs to both ends of each
       ground strap.

2. Referring to figure 3-18, connect ground straps to
   controller as follows:

    a. Connect two ground straps to controller ground
       terminal.

    b. Connect one ground strap to earth ground.

    c. Route other ground strap to first drive in daisy
       chain. Route remaining ground straps (prepared in
       step 1) from drive to drive.

3. Make daisy chain ground connections at each drive as
   follows:

    a. Remove screw and lockwasher from system ground
       terminal (DC GND) on each drive. See figure 3-19.

    b. Attach system ground strap to drive ground terminal.
       Ensure that lockwasher is between ground strap and
       ground terminal.

CIRCUIT BOARD SWITCHES AND INDICATORS

The circuit boards inside the drive contain a number of switches that must be set correctly for normal operation of the drive. The following pictures and tables contain information about switch settings:

- Figure 3-20 -- shows pictures of actual DIP switches with instructions on setting them to either the open (off) or the closed (on) position.

- Figure 3-21 -- identifies switches and gives their locations on the I/O board.

- Table 3-3 -- lists the possible settings for normal drive operation for all switches on the I/O board.

- Figure 3-22 -- identifies various types of control boards.

- Figure 3-23 -- identifies switches and indicators on the control board.

- Table 3-4 -- lists the possible settings for normal drive operation for switches on the control board. However, setting the sector switches and logical address is covered later in this section.

- Table 3-5 -- describes the maintenance indicators.

- Figure 3-24 -- identifies jumpers on the control board.

- Table 3-6 -- lists the possible settings for normal drive operation for jumpers on the control board.

You may encounter two types of switches. Rocker switches are actuated by pressing one end of the actuator or the other (rocking it) to turn the switch on (closed) or off (open). Slide switches are actuated by sliding the actuator one way or the other to turn the switch on or off. Use a slender ball point pen, a straightened paper clip, or any similar object to change switch settings. Do not use a lead pencil point as it may break off and lodge in the switch, or cause the switch to malfunction.

To determine the type of control board in your drive, examine the arrangement of DIP switches on the board. By uncovering slots in the drive top cover, you can see the DIP switches. Figure 3-22 shows Type 1, Type 2, and Type 3 control boards.

Type 1 control boards have 3 groups of switches with 6 switches in each group. Type 2 and Type 3 control boards have 2 groups of switches, with 10 switches in each group. The main

difference between Type 2 and Type 3 boards is the location and function of jumpers that select certain features.

Setting the circuit board switches or seeing the maintenance indicators does not require removing the top cover. Both the top cover and the rear panel have openings to allow access to the DIP switches. On Type 3 control boards, the top cover opening also allows access to the jumpers. However, for Type 2 control boards, it is necessary to remove the top cover to examine or change the jumpers.
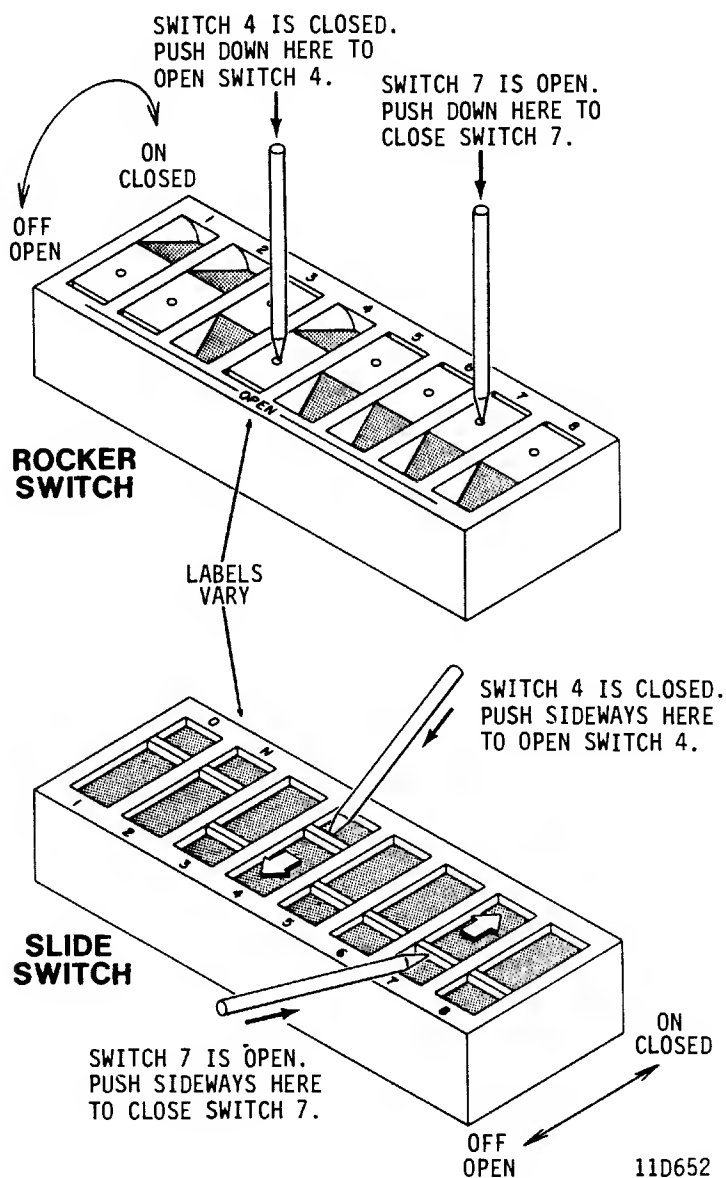
Figure 3-20. How to Set DIP Switches
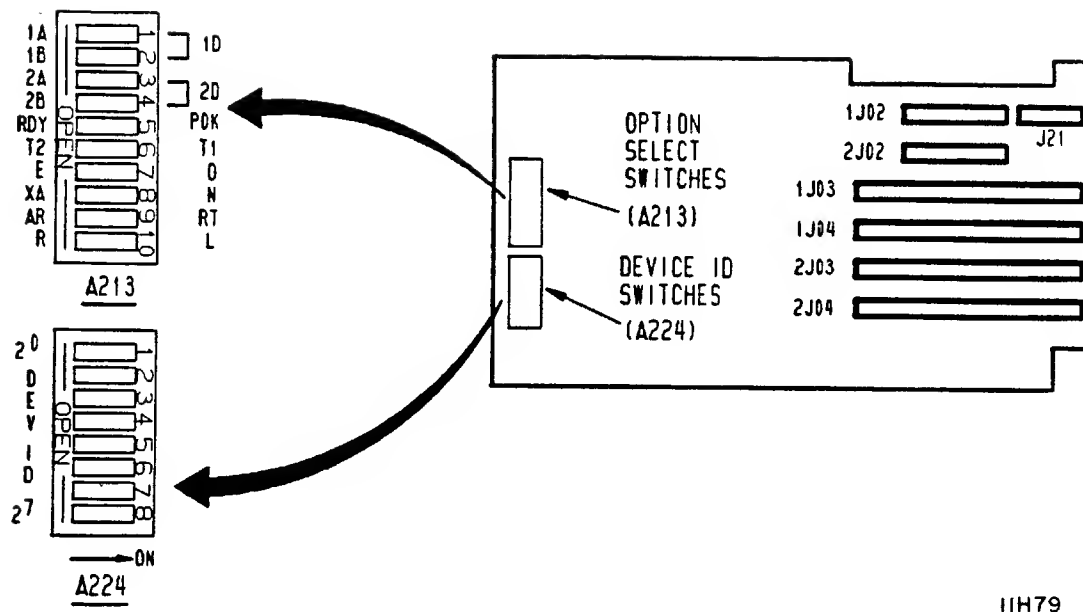
IIH79

Figure 3-21. I/O Board Switches

TABLE 3-3.   I/O BOARD SWITCHES

Switch	Setting	Description
1A/1D, 1B/1D		Enable/Disable CH 1 and select an option for sending Index & Sector to CH 1 controller. The four combinations of switch settings are as follows:
1A/1D 1B/1D	1A 1D	This pair of switch settings enables CH 1 & sends I & S on A cable only
1A/1D 1B/1D	1D 1B	This pair of switch settings enables CH 1 & sends I & S on B cable only
1A/1D 1B/1D	1A 1B	This pair of switch settings enables CH 1 & sends I & S on A and B cables
1A/1D 1B/1D	1D 1D	This pair of switch settings disables CH 1
2A/2D, 2B/2D		Enable/Disable CH 2 and select an option for sending Index & Sector to CH 2 controller (see description of CH 1 switches)
RDY/POK	RDY	Normal I/O Ready status (Up to speed, heads loaded, and no fault exists)
	POK	Ready status with Power OK. In addition to above conditions (when switch is in RDY), Ready status also indicates that the optional power supply we provide has an acceptable ac input voltage. If the ac input voltage drops, Ready status goes inactive at least 5 milliseconds before a voltage fault is registered.
Table Continued on Next Page		

TABLE 3-3.   I/O BOARD SWITCHES (Contd)

Switch	Setting	Description
T2/T1		Selects type of extended cylinder addressing, provided that XA/N switch is set in XA position.
	T2	Enables Extended Cylinder Address Bits 2^{10} and 2^{11}, via Tag 2 (Head Select). Can be selected in either SMD-O or SMD-E mode.
	T1	Enables Extended Cylinder Address Bit 2^{10}, via Tag 1 (Cylinder Select). Can be selected in either SMD-O or SMD-E mode, but Tags 4 and 6 are unusable with this selection.
E/O	E	SMD-E mode (Tags 1 - 6)
	O	SMD-O mode (Tags 1 - 3)
XA/N	XA	Extended Cylinder Address (cylinders 0-1634 on 736 MB, 1120 MB, and 1230 MB drives; 0-1380 on 850 MB drives); method set by T2/T1 switch
	N	Normal Cylinder Address (cylinders 0-1023): T2/T1 switch has no effect
AR/RT	AR	Absolute Reserve (Dual Channel)
	RT	Reserve Timer (Dual Channel)
R/L	R	Remote power on
	L	Local power on
DEV ID 2^0-2^7	(Closed)	Set according to customer requirements.
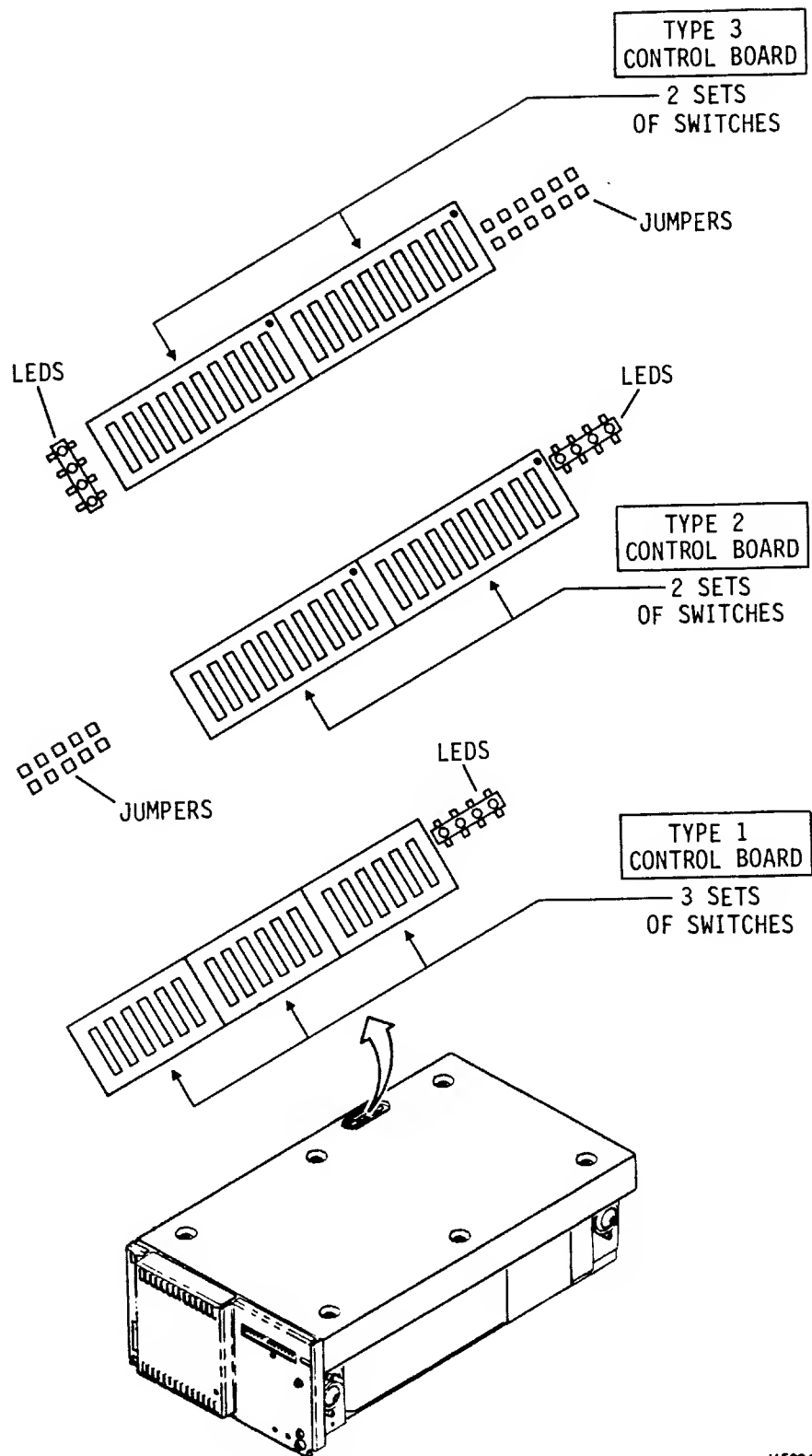
Figure 3-22.   Control Board Types

TABLE 3-4. CONTROL BOARD INDICATORS

Indicator	Function
Maintenance LEDs	Provide indications of drive status when no operator panel or status/control panel is available.
+5 V	Indicates presence of +5 V.
SEL	Indicates that drive is selected by a controller.
RDY	Indicates that the drive is ready (spindle power on is complete, heads are loaded, and no fault exists).
FLT	Indicates that a fault exists within the drive.
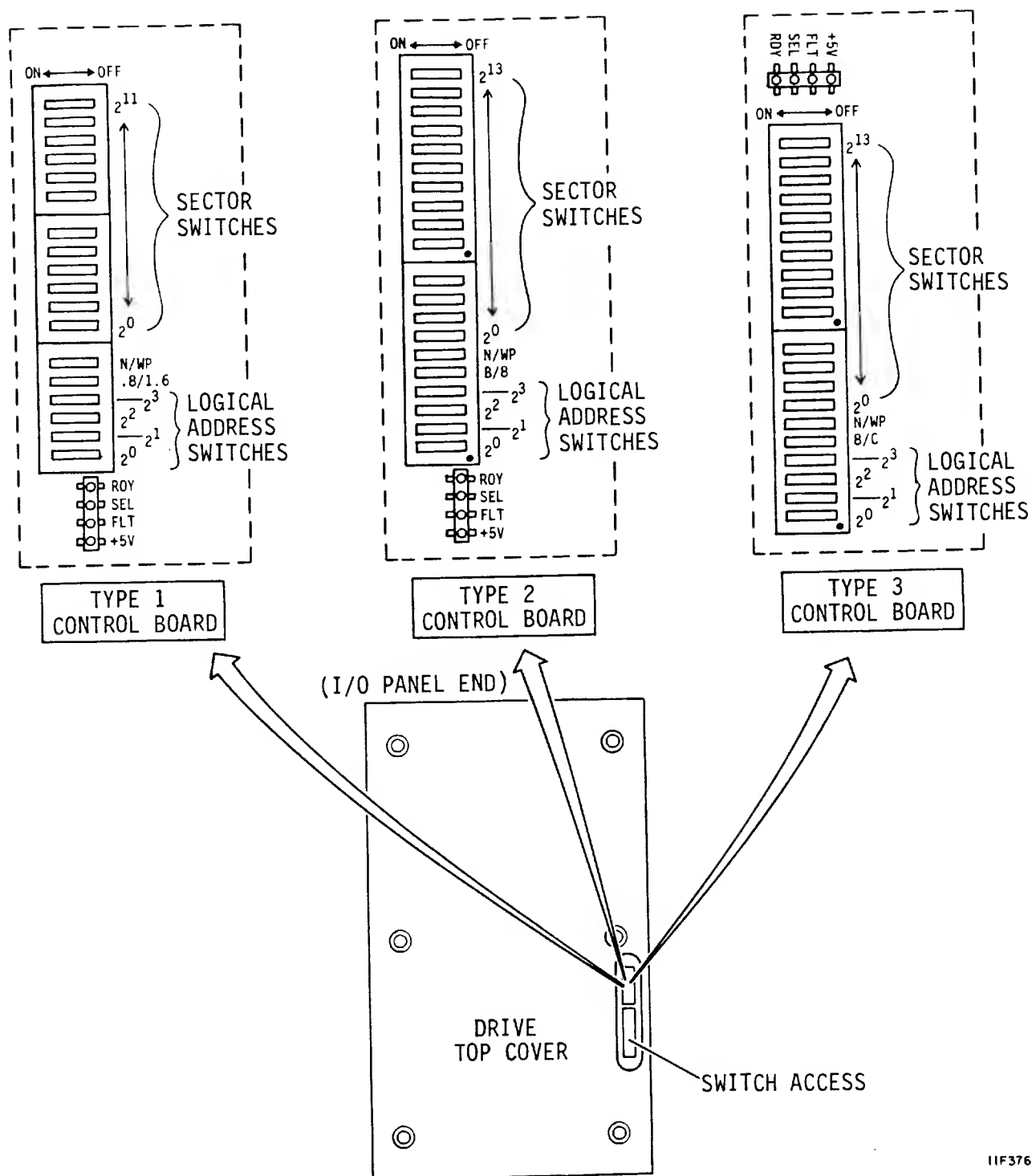
Figure 3-23. Control Board Switches and Indicators

INSTALLATION AND CHECKOUT   83325710 C

TABLE 3-5.   CONTROL BOARD SWITCHES

Switch	Setting*	Description
Logical Address Switches 2^0-2^3		Switches 2^0 through 2^3 are used to set the logical address for drives without the operator panel or status/control panel. See discussion on Setting Logical Address Switches.
Sector Switches		Allow the dividing of the disk into specific segments or sectors. The switch settings determine the number of sectors per track. See discussion on Setting Sector Switches (Types 2 and 3) or appendix B (Type 1).
.8/1.6 (Type 1) (Sector Clock) Switch	.8	Sector clock frequency = .8 MHz
	1.6	Sector clock frequency = 1.6 MHz
B/8 (Type 2) B/C (Type 3) (Sector Clock) Switch	8 or C (Off)	Clock frequency -- Drive capacity 1.6 MHz 736 MB drives 1.6 MHz 850 MB drives 1.83 MHz 1120 MB drives 2.016 MHz 1230 MB drives
	B (On)·	Byte frequency sector clock.
WP/N (Write Protect/ Normal) Switch	WP (Off)	Write Protect
	N (On)	Normal
		Placing the switch in the WP position prevents the drive from performing write operations. The switch must be in the N position to enable write operations.

*On = Closed; Off = Open

JUMPERS {
SWP1
SWPD
DUB
RUNT
GT/S

RETURN

RPI

LEDS

LEDS

RTN
SWP1
SWPD
IDX S
RUNT
FF
} JUMPERS

TYPE 2
CONTROL BOARD

TYPE 3
CONTROL BOARD
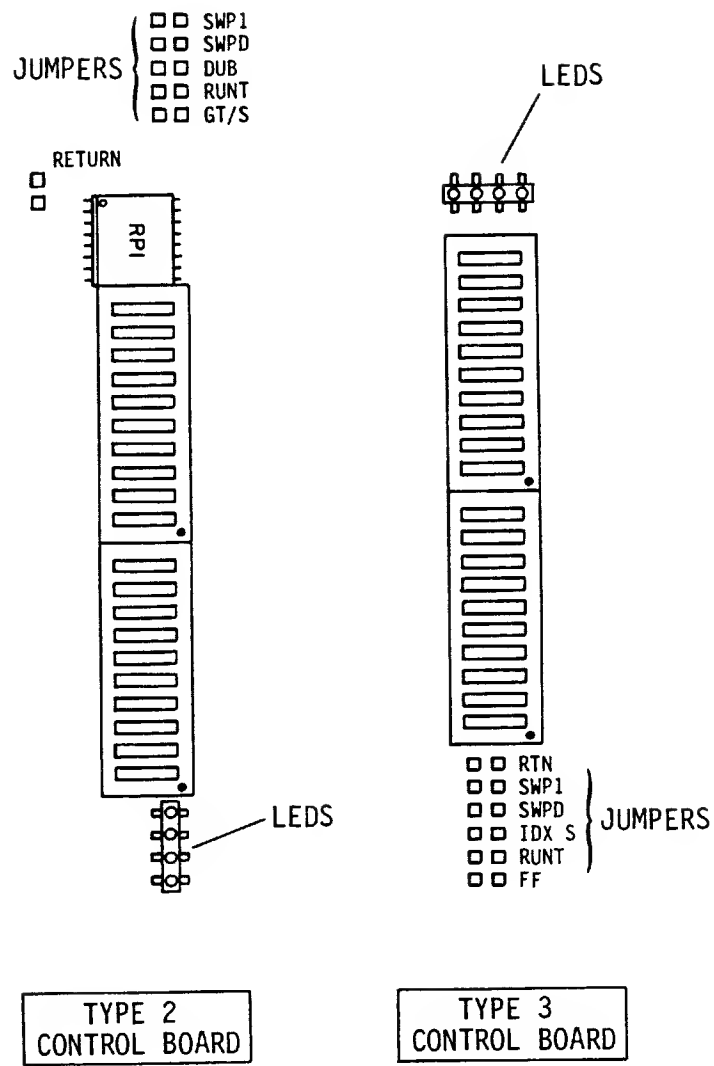
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Figure 3-24. Control Board Jumpers

TABLE 3-6. CONTROL BOARD JUMPERS

Jumper [Board Types]	Setting	Description
RUNT Jumper* [2 & 3]	Connected	Runt sector pulses are suppressed.
	Disconnected	Runt sector pulses may appear.
SWP1 Jumper** [2 & 3]	Connected	Disables the option for sweep only on seeks.
	Disconnected	Enables the option for sweep only on seeks.
SWPD Jumper** [2 & 3]	Connected	Disables sweep cycles.
	Disconnected	Enables sweep cycles.
DUB Jumper [2 only]	Connected	Jumper is properly set at the factory and must not be changed.
GT/S Jumper [2 only]	Disconnected	Jumper is properly set at the factory and must not be changed.
RTN (Return) Jumper** (Not labeled on Type 2 boards) [2 & 3]	Connected	Enables the option to return the heads to their original position following a sweep segment.
	Disconnected	Disables that option.
IDX S Jumper [3 only]	Disconnected	Jumper is properly set at the factory and must not be changed.
FF [3 only]	N/A	Reserved for future use.

* For explanation, see Setting Sector Switches.

** Read Programming the Sweep Cycle Function before selecting sweep cycle options. Some controllers will not function with sweep cycle enabled.

Setting Logical Address Switches

The control board logical address switch settings are shown in table 3-7. For drives with an operator panel or status/control panel, the Logical Address switch settings on the control board are ignored. Set the logical address on either panel by pressing the Logical Address switch and observing the indicators, displayed in binary (see figure 2-1).

TABLE 3-7. LOGICAL ADDRESS SWITCHES ON CONTROL BOARD

Logical Address	Switch (Binary)*				Logical Address	Switch (Binary)*			
	2^0	2^1	2^2	2^3		2^0	2^1	2^2	2^3
0	C	C	C	C	8	C	C	C	O
1	O	C	C	C	9	O	C	C	O
2	C	O	C	C	10	C	O	C	O
3	O	O	C	C	11	O	O	C	O
4	C	C	O	C	12	C	C	O	O
5	O	C	O	C	13	O	C	O	O
6	C	O	O	C	14	C	O	O	O
7	O	O	O	C	15	O	O	O	O
* O = Open (Off), C = Closed (On)									

Programming the Sweep Cycle Function

The sweep cycle is a feature that periodically moves the heads to different locations on the disks during intervals when the drive is idle. The following are highlights of the sweep cycle function:

- Using the sweep cycle enhances drive reliability. We encourage you either to enable the drive sweep cycle or to use a sweep cycle driven at the system or subsystem level. Consult with an analyst in making this choice.

- There are several sweep cycle options available at the drive level. Make sure that the selected option is compatible with system operation.

- Our testing has verified that sweep activity results in lower particle count in the module.

- The sweep routine consumes approximately 11 seconds of a 13-hour period. Thus, the drive is available to the system more than 99% of the time.

- You can disable the sweep cycle (described below) without affecting the specified Mean Time Between Failures (MTBF) or warranty agreements.

Status codes associated with the sweep cycle are discussed at the end of this supplemental packet.

The drive is preset during manufacturing with a set of sweep cycle options selected. Three jumpers on the control board control the selection, as shown in figure 3-24.

The three sweep cycle jumpers are identified as SWPD, SWP1, and RTN. The following paragraphs discuss the functions controlled by each jumper and tell different ways to position the jumpers:

SWPD -- enables or disables the sweep cycle function. The jumper can be positioned as follows:

- Connecting the two pins -- disables the sweep cycle function. The other jumpers then have no effect.

- Mounted on one pin (two pins not connected) -- enables the sweep cycle function.

SWP1 -- enables or disables the option to sweep only on seeks. When enabled, sweep movements can occur only in conjunction with seeks required by the controller. Each time the drive performs a sweep cycle, it starts a 12-minute timeout. When the timeout has elapsed, the drive performs another sweep cycle only when it receives a Seek command (Tag 1). When combining a sweep cycle with a seek, the drive performs the sweep cycle first and then executes the Seek command. The jumper can be positioned as follows:

- Connecting the two pins -- disables the option to sweep only on seeks (sweep cycles can be initiated within the drive).

- Mounted on one pin (two pins not connected) -- enables the option to sweep only on seeks.

RTN (not labeled on Type 2 control boards) -- enables or
disables the option to return the heads to their original
cylinder following a sweep segment. The jumper can be
positioned as follows:

- Connecting the two pins -- enables the option. The drive
  performs the sweep and, when selected, returns to the
  original cylinder (where it was before the sweep
  occurred) with the following exceptions:

  - If the sweep was initiated by a Seek command, the
    drive performs the sweep function and then moves the
    heads to the cylinder requested by the controller.

  - If the drive had not been selected during the 12
    minutes prior to a sweep, the heads stay on a cylinder
    accessed during the sweep segment.

- Mounted on one pin (two pins not connected) -- disables
  the option. The heads always stay on a cylinder accessed
  during the sweep segment with the following exception:
  If the sweep was initiated by a Seek command, the drive
  performs the sweep function and then moves the heads to
  the cylinder requested by the controller.

Setting Sector Switches

Setting the sector select switches is discussed in the
following paragraphs. Refer to the subsystem or controller
reference manual to determine the number of sectors (or the
bytes/sector) required by the controller. To achieve that
requirement, the following settings are required:

- Sector switches -- See figure 3-23.
- Sector Clock switch (B/C or B/8) -- See figure 3-23.
- RUNT jumper -- See figure 3-24.

The information in this topic applies to drives with Type 2 and
Type 3 control boards (see figure 3-23). If your drive has a
Type 1 control board, refer to appendix B for instructions on
setting its sector switches.

Your task of setting the sector switches on the drive is
relatively easy if you already understand the various choices
available. There are a number of selection methods, each
described by a separate table of selections. If you know how
many sectors are needed or the number of bytes in each sector,
refer to the switch selection tables, make the suggested

settings, and proceed with the drive installation. However, if
you need more information about the different methods before
you choose one of them, read on. The following material will
step you through the selection process.

Additional background information about sector selection
appears in appendix B. For most installations it will not be
necessary to refer to appendix B. However, some systems
designers, when matching a disk drive to a specific controller,
choose a sector length different from any given here in the
tables. In cases like this, the material in the appendix
relates arbitrary sector lengths to switch settings.

Sixteen tables are needed to cover all the possibilities for
sector selection on the drives described in this manual. The
following variables make it necessary to use multiple tables:

- Drive Capacity -- the 736 MB drive, the 850 MB drive, the
  1120 MB drive, and the 1230 MB drive have different
  numbers of bytes per track.

- Sector Clock Frequency -- selecting a different sector
  clock frequency (via the B/C switch on Type 3 control
  boards [B/8 switch on Type 2]) affects the switch
  settings and in some cases the number of bytes per sector.

- Round-up and Round-down Methods -- produce differing
  results when the number of sector clock pulses per
  revolution is not evenly divisible by the number of
  sectors. The problem of an uneven division can be solved
  by methods of either rounding up or rounding down the
  result.

Round-down and Round-up Methods

Figure 3-25 uses an example of 63 sectors to show how the two
methods differ both in terms of sector lengths and in the
presence or absence of an extra sector pulse. This
illustration also lists and describes the various tables.

For the round-down method, the sector tables list the bytes in
usable sectors and the bytes in the runt sector. A runt sector
is a short interval following the last usable sector. When a
runt sector occurs, it is preceded by an extra sector pulse.
The topic Runt Suppression describes when this extra sector
pulse can be eliminated.

For the round-up method, the sector tables list the bytes in
early sectors and the bytes in the last sector. The last sector
can be somewhat shorter than the other sectors. There is no
runt sector (or extra sector pulse), however.
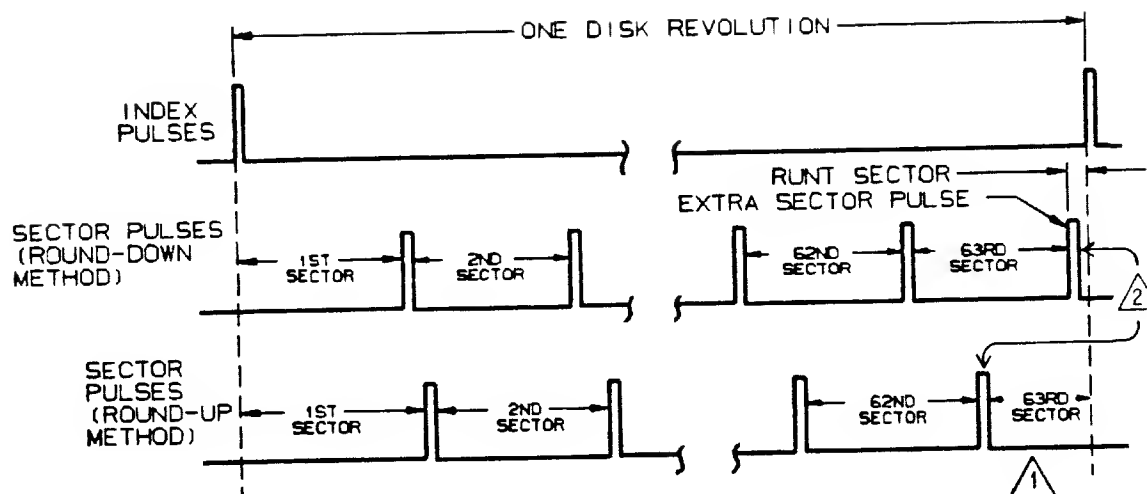
NOTES:

/1\ WITH ROUND-UP METHOD, LAST SECTOR MAY
     BE SHORTER THAN EARLY SECTORS.

/2\ CONNECTING "RUNT" JUMPER SUPPRESSES
     SECTOR PULSE PRECEDING SHORT LAST SECTOR.

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SELECTING A TABLE
FOR 736 MB DRIVES:

	B/C [B/8] Switch	Round-down Method	Round-up Method
1.6 MHz Clock	C [8] (Off or Open)	Table 3-9	Table 3-10
Byte Clock	B [B] (On or Closed)	Table 3-11	Table 3-12

SELECTING A TABLE
FOR 850 MB DRIVES:

	B/C [B/8] Switch	Round-down Method	Round-up Method
1.6 MHz Clock	C [8] (Off or Open)	Table 3-13	Table 3-14
Byte Clock	B [B] (On or Closed)	Table 3-15	Table 3-16

SELECTING A TABLE
FOR 1120 MB DRIVES:

	B/C [B/8] Switch	Round-down Method	Round-up Method
1.83 MHz Clock	C [8] (Off or Open)	Table 3-17	Table 3-18
Byte Clock	B [B] (On or Closed)	Table 3-19	Table 3-20

SELECTING A TABLE
FOR 1230 MB DRIVES:

	B/C [B/8] Switch	Round-down Method	Round-up Method
2.016 MHz Clock	C [8] (Off or Open)	Table 3-21	Table 3-22
Byte Clock	B [B] (On or Closed)	Table 3-23	Table 3-24

Figure 3-25. Choosing a Sector Selection Method

The round-up and round-down methods yield the same results for many sector counts. In these cases, the two methods call for identical switch settings.

The choice of sector clock frequencies (via the B/C switch [B/8 switch on Type 2 boards]) can affect the lengths of the usable sectors (round-down and round-up methods), the runt sector (round-down method), or the last sector (round-up method).

Exact Sector Lengths

The sector selection tables provide idealized values for sector lengths. Deriving exact values from these idealized values requires an adjustment. This adjustment must be considered if the chosen sector length allows minimal overhead or if runt sector suppression is planned.

The adjustment must be made to calculate the actual lengths of the first sector (logical sector 0) and the last sector. For each drive type and sector clock combination, table 3-8 lists the number of bytes of adjustment that must be added to the first sector and subtracted from the last sector.

TABLE 3-8.   SECTOR LENGTH ADJUSTMENT

Drive Type	Sector Clock	Adjustment (Bytes)
736 MB	1.6 MHz	4.50
736 MB	Byte Clock	5.00
850 MB	1.6 MHz	6.00
850 MB	Byte Clock	6.00
1120 MB	1.83 MHz	6.00
1120 MB	Byte Clock	7.00
1230 MB	2.016 MHz	7.50
1230 MB	Byte Clock	8.00

The following examples show how to calculate exact sector
lengths for the round-down method and then the round-up
method. These examples are based on selecting 63 sectors on a
736 MB drive with the 1.6 MHz sector clock. Table 3-8
indicates for this case that the adjustment is 4.50 bytes.

Example 1: Round-down method (see table 3-9)

<u>Values from table</u>

Sectors 0 thru 62 = 479.25 bytes

Runt Sector = 47.25 bytes

<u>Adjusted values</u>

Sector 0 = 479.25 + 4.50 = 483.75 bytes
Sectors 1 thru 62 = 479.25 bytes
Runt Sector = 47.25 - 4.50 = 42.75 bytes

Example 2: Round-up method (see table 3-10)

<u>Values from table</u>

Sectors 1 thru 61 = 480.37 bytes

Sector 62 = 456.75 bytes

<u>Adjusted values</u>

Sector 0 = 480.37 + 4.50 = 484.87 bytes
Sectors 1 thru 61 = 480.37 bytes
Sector 62 = 456.75 - 4.50 = 452.25 bytes

If a round-down sector table indicates either no runt or a very
short runt, in actuality the last usable sector is shortened.
Example 3 is based on selecting 89 sectors on a 736 MB drive
with the 1.6 MHz sector clock:

Example 3: Round-down method (see table 3-9)

<u>Values from table</u>

Sectors 0 thru 88 = 339.75 bytes

Runt Sector = 2.25 bytes

<u>Adjusted values</u>

Sector 0 = 339.75 + 4.50 = 344.25 bytes
Sectors 1 thru 88 = 339.75 bytes
Runt Sector = 2.25 - 4.50 = -2.25 bytes

A negative runt sector length doesn't make sense, however. The numbers indicate
that there really is no runt and that sector 88 is shortened by 2.25 bytes.
Expressing these results more sensibly:

Sector 0 = 339.75 + 4.50 = 344.25 bytes
Sectors 1 thru 87 = 339.75 bytes
Sector 88 = 339.75 - 2.25 = 337.50 bytes

Runt Suppression

Runt suppression may or may not be desirable. Runt sector
pulses are suppressed when the RUNT jumper is connected (see
figure 3-24 and table 3-6). Consider the three examples given
above in the discussion of exact sector lengths.

Selecting runt suppression defeats the purpose of using the
round-up method. Referring to example 2, the 452.25-byte
(shorter) last sector would no longer be preceded by a sector
pulse and would not be available for use.

Depending on the controller requirements, runt suppression may improve operation with the round-down method. If runt suppression had been selected in example 1, the runt sector would no longer exist. With no extra sector pulse, sector 62 would be extended by 42.75 bytes.

If runt suppression had been selected in example 3, the sector pulse preceding sector 88 would be suppressed. This illustrates an important point about runt suppression:

If the length of the runt shown in the sector table is shorter than the length of the adjustment shown in table 3-8, DO NOT use runt sector suppression.

Making the Selection

You must decide now which sector selection table you will use for switch setting information. If you don't know which table is best, compare the sector lengths listed in each of the tables to the requirements of the controller. The choice of tables may be arbitrary, or one of the tables may offer a real advantage over the others.

The Sector Select switch assembly has 14 independent switches used for selecting sectors. These switches and the B/C [or B/8] switch are located on the control board as shown in figure 3-23. Across from the number of sectors listed in each table is a row of Cs and Os. C represents the Closed (On) position of the sector switch. O represents the Open (Off) position of the sector switch. Set the switches to the positions designated in the table while referring to figure 3-20 for an illustration of the switch positions. Verify also that the B/C [or B/8] switch is set correctly.

For future reference, you may want to record the switch settings you made. Use the following worksheet:

Table Used: _____

Number of Sectors: _____

Switch Settings:
2^0 ___ 2^1 ___ 2^2 ___ 2^3 ___ 2^4 ___
2^5 ___ 2^6 ___ 2^7 ___ 2^8 ___ 2^9 ___
2^{10} ___ 2^{11} ___ 2^{12} ___ 2^{13} ___

B/C [or B/8] Switch: On _____ Off _____

RUNT jumper: Connected ___ Disconnected ___

TABLE 3-9.   SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	O	O	C	C	C	O	C	O	O	C	7560	0
5	O	O	O	O	O	O	O	O	C	C	O	C	O	C	6048	0
6	O	O	O	O	O	O	O	C	O	C	C	C	O	C	5040	0
7	O	O	O	O	O	O	O	O	C	O	O	O	C	C	4320	0
8	O	O	O	O	O	C	C	C	O	C	O	O	C	C	3780	0
9	O	C	C	O	C	O	C	O	O	O	C	O	C	C	3359.25	6.75
10	O	O	O	O	O	O	O	C	C	O	C	O	C	C	3024	0
11	C	O	C	O	C	C	C	O	O	C	C	O	C	C	2748.37	7.87
12	O	O	O	O	O	O	C	O	C	C	C	O	C	C	2520	0
13	C	O	C	C	O	C	C	C	C	C	C	O	C	C	2325.37	10.12
14	O	O	O	O	O	O	O	C	O	O	O	C	C	C	2160	0
15	O	O	O	O	O	O	O	O	C	O	O	C	C	C	2016	0
16	O	O	O	O	C	C	C	O	C	O	O	C	C	C	1890	0
17	C	C	O	O	C	O	C	C	C	O	O	C	C	C	1778.62	3.37
18	C	C	O	C	O	C	O	O	O	C	O	C	C	C	1679.62	6.75
19	O	C	O	C	C	C	C	O	O	C	O	C	C	C	1590.75	15.75
20	O	O	O	O	O	O	C	C	O	C	O	C	C	C	1512	0
21	O	O	O	O	O	O	O	O	C	C	O	C	C	C	1440	0
22	C	C	O	C	C	C	O	O	C	C	O	C	C	C	1373.62	20.25
23	O	O	O	O	C	C	C	O	C	C	O	C	C	C	1314	18
24	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1260	0
25	C	O	C	C	O	O	C	C	C	C	O	C	C	C	1209.37	5.62
26	C	C	C	O	C	C	C	C	C	C	O	C	C	C	1162.12	24.75
27	C	O	C	C	C	O	O	O	O	O	C	C	C	C	1119.37	16.87
28	O	O	O	O	O	O	C	O	O	O	C	C	C	C	1080	0
29	O	C	O	O	O	C	C	O	O	O	C	C	C	C	1041.75	29.25
30	O	O	O	O	O	O	O	C	O	O	C	C	C	C	1008	0
31	C	O	C	C	C	O	O	C	O	O	C	C	C	C	975.37	3.37
32	O	O	O	C	C	C	O	C	O	O	C	C	C	C	945	0
33	O	C	O	O	C	O	C	C	O	O	C	C	C	C	915.75	20.25
34	O	C	O	C	O	C	C	C	O	O	C	C	C	C	888.75	22.50
35	O	O	O	O	O	O	O	O	C	O	C	C	C	C	864	0
36	O	C	C	O	C	O	O	O	C	O	C	C	C	C	839.25	27
37	O	C	O	C	O	C	O	O	C	O	C	C	C	C	816.75	20.25
38	C	O	C	C	C	C	O	O	C	O	C	C	C	C	795.37	15.75
39	C	C	C	C	O	O	C	O	C	O	C	C	C	C	775.12	10.12
40	O	O	O	O	O	C	C	O	C	O	C	C	C	C	756	0
41	C	O	O	O	C	C	C	O	C	O	C	C	C	C	736.87	28.12
42	O	O	O	O	O	O	O	C	C	O	C	C	C	C	720	0
43	C	C	C	C	O	O	O	C	C	O	C	C	C	C	703.12	5.62
44	O	C	C	C	C	O	O	C	C	O	C	C	C	C	686.25	45
45	C	C	O	C	O	C	O	C	C	O	C	C	C	C	671.62	16.87

* C = Closed or On; O = Open or Off

———————————— Continued ————————————

TABLE 3-9.　SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	O	O	O	C	C	C	O	C	C	O	C	C	C	C	657	18
47	C	O	C	O	O	O	C	C	C	O	C	C	C	C	642.37	48.37
48	O	O	O	O	C	O	C	C	C	O	C	C	C	C	630	0
49	O	O	C	C	C	O	C	C	C	O	C	C	C	C	616.50	31.50
50	C	C	C	O	O	C	C	C	C	O	C	C	C	C	604.12	33.75
51	C	O	O	O	C	C	C	C	C	O	C	C	C	C	592.87	3.37
52	O	O	C	C	C	C	C	C	C	O	C	C	C	C	580.50	54
53	C	O	C	O	O	O	O	O	O	C	C	C	C	C	570.37	10.12
54	C	C	C	C	O	O	O	O	O	C	C	C	C	C	559.12	47.25
55	O	O	O	C	C	O	O	O	O	C	C	C	C	C	549	45
56	O	O	O	O	O	C	O	O	O	C	C	C	C	C	540	0
57	C	O	O	C	O	C	O	O	O	C	C	C	C	C	529.87	37.12
58	C	O	O	O	C	C	O	O	O	C	C	C	C	C	520.87	29.25
59	C	O	O	C	C	C	O	O	O	C	C	C	C	C	511.87	39.37
60	O	O	O	O	O	O	C	O	O	C	C	C	C	C	504	0
61	O	O	O	C	O	O	C	O	O	C	C	C	C	C	495	45
62	C	C	C	C	O	O	C	O	O	C	C	C	C	C	487.12	38.25
63	O	C	C	O	C	O	C	O	O	C	C	C	C	C	479.25	47.25
64	O	O	C	C	C	O	C	O	O	C	C	C	C	C	472.50	0
65	C	C	O	O	O	C	C	O	O	C	C	C	C	C	464.62	39.37
66	C	O	O	C	O	C	C	O	O	C	C	C	C	C	457.87	20.25
67	C	C	C	C	O	C	C	O	O	C	C	C	C	C	451.12	14.62
68	C	O	C	O	C	C	C	O	O	C	C	C	C	C	444.37	22.50
69	C	C	O	C	C	C	C	O	O	C	C	C	C	C	437.62	43.87
70	O	O	O	O	O	O	O	C	O	C	C	C	C	C	432	0
71	O	C	C	O	O	O	O	C	O	C	C	C	C	C	425.25	47.25
72	C	C	O	C	O	O	O	C	O	C	C	C	C	C	419.62	27
73	O	O	O	O	C	O	O	C	O	C	C	C	C	C	414	18
74	C	O	C	O	C	O	O	C	O	C	C	C	C	C	408.37	20.25
75	O	C	O	C	C	O	O	C	O	C	C	C	C	C	402.75	33.75
76	C	C	C	C	C	O	O	C	O	C	C	C	C	C	397.12	58.50
77	C	C	O	O	O	C	O	C	O	C	C	C	C	C	392.62	7.87
78	O	O	O	C	O	C	O	C	O	C	C	C	C	C	387	54
79	O	O	C	C	O	C	O	C	O	C	C	C	C	C	382.50	22.50
80	O	O	O	O	C	C	O	C	O	C	C	C	C	C	378	0
81	C	O	C	O	C	C	O	C	O	C	C	C	C	C	372.37	77.62
82	C	O	O	C	C	C	O	C	O	C	C	C	C	C	367.87	74.25
83	C	O	C	C	C	C	O	C	O	C	C	C	C	C	363.37	79.87
84	O	O	O	O	O	O	C	C	O	C	C	C	C	C	360	0
85	O	O	C	O	O	O	C	C	O	C	C	C	C	C	355.50	22.50
86	O	O	O	C	O	O	C	C	O	C	C	C	C	C	351	54
87	O	O	C	C	O	O	C	C	O	C	C	C	C	C	346.50	94.50

* C = Closed or On; O = Open or Off

───── Continued ─────

TABLE 3-9.   SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	C	C	C	O	O	C	C	O	C	C	C	C	C	343.12	45
89	O	C	O	O	C	O	C	C	O	C	C	C	C	C	339.75	2.25
90	O	C	C	O	C	O	C	C	O	C	C	C	C	C	335.25	67.50
91	C	O	O	C	C	O	C	C	O	C	C	C	C	C	331.87	39.37
92	O	O	C	C	C	O	C	C	O	C	C	C	C	C	328.50	18
93	C	C	C	C	C	O	C	C	O	C	C	C	C	C	325.12	3.37
94	C	C	O	O	O	C	C	C	O	C	C	C	C	C	320.62	101.25
95	O	C	C	O	O	C	C	C	O	C	C	C	C	C	317.25	101.25
96	O	O	O	C	O	C	C	C	O	C	C	C	C	C	315	0
97	C	C	O	C	O	C	C	C	O	C	C	C	C	C	311.62	12.37
98	O	C	C	C	O	C	C	C	O	C	C	C	C	C	308.25	31.50
99	C	O	O	O	C	C	C	C	O	C	C	C	C	C	304.87	57.37
100	O	O	C	O	C	C	C	C	O	C	C	C	C	C	301.50	90
101	O	C	C	O	C	C	C	C	O	C	C	C	C	C	299.25	15.75
102	C	O	O	C	C	C	C	C	O	C	C	C	C	C	295.87	60.75
103	O	O	C	C	C	C	C	C	O	C	C	C	C	C	292.50	112.50
104	O	C	C	C	C	C	C	C	O	C	C	C	C	C	290.25	54
105	O	O	O	O	O	O	O	O	C	C	C	C	C	C	288	0
106	C	C	O	O	O	O	O	O	C	C	C	C	C	C	284.62	69.75
107	C	O	C	O	O	O	O	O	C	C	C	C	C	C	282.37	25.87
108	O	O	O	C	O	O	O	O	C	C	C	C	C	C	279	108
109	O	C	O	C	O	O	O	O	C	C	C	C	C	C	276.75	74.25
110	O	O	C	C	O	O	O	O	C	C	C	C	C	C	274.50	45
111	O	C	C	C	O	O	O	O	C	C	C	C	C	C	272.25	20.25
112	O	O	O	O	C	O	O	O	C	C	C	C	C	C	270	0
113	C	C	O	O	C	O	O	O	C	C	C	C	C	C	266.62	111.37
114	C	O	C	O	C	O	O	O	C	C	C	C	C	C	264.37	101.25
115	C	C	C	O	C	O	O	O	C	C	C	C	C	C	262.12	95.62
116	C	O	O	C	C	O	O	O	C	C	C	C	C	C	259.87	94.50
117	C	C	O	C	C	O	O	O	C	C	C	C	C	C	257.62	97.87
118	C	O	C	C	C	O	O	O	C	C	C	C	C	C	255.37	105.75
119	C	C	C	C	C	O	O	O	C	C	C	C	C	C	253.12	118.12
120	O	O	O	O	O	C	O	O	C	C	C	C	C	C	252	0
121	O	C	O	O	O	C	O	O	C	C	C	C	C	C	249.75	20.25
122	O	O	C	O	O	C	O	O	C	C	C	C	C	C	247.50	45
123	O	C	C	O	O	C	O	O	C	C	C	C	C	C	245.25	74.25
124	O	O	O	C	O	C	O	O	C	C	C	C	C	C	243	108
125	C	O	O	C	O	C	O	O	C	C	C	C	C	C	241.87	5.62
126	C	C	O	C	O	C	O	O	C	C	C	C	C	C	239.62	47.25
127	C	O	C	C	O	C	O	O	C	C	C	C	C	C	237.37	93.37
128	O	C	C	C	O	C	O	O	C	C	C	C	C	C	236.25	0

* C = Closed or On; O = Open or Off

TABLE 3-10. SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-UP METHOD

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	O	O	C	C	C	O	C	O	O	C	7560	7560
5	O	O	O	O	O	O	O	O	C	C	O	C	O	C	6048	6048
6	O	O	O	O	O	O	O	C	O	C	C	C	O	C	5040	5040
7	O	O	O	O	O	O	O	O	C	O	O	O	C	C	4320	4320
8	O	O	O	O	O	C	C	C	O	C	O	O	C	C	3780	3780
9	C	O	C	O	C	O	C	O	O	O	C	O	C	C	3360.37	3357
10	O	O	O	O	O	O	O	C	C	O	C	O	C	C	3024	3024
11	O	O	C	O	C	C	C	O	O	C	C	O	C	C	2749.50	2745
12	O	O	O	O	O	O	C	O	C	C	C	O	C	C	2520	2520
13	O	O	C	C	O	C	C	C	C	C	C	O	C	C	2326.50	2322
14	O	O	O	O	O	O	O	C	O	O	O	C	C	C	2160	2160
15	O	O	O	O	O	O	O	O	C	O	O	C	C	C	2016	2016
16	O	O	O	O	C	C	C	O	C	O	O	C	C	C	1890	1890
17	O	C	O	O	C	O	C	C	C	O	O	C	C	C	1779.75	1764
18	O	C	O	C	O	C	O	O	O	C	O	C	C	C	1680.75	1667.25
19	C	O	O	C	C	C	C	O	O	C	O	C	C	C	1591.87	1586.25
20	O	O	O	O	O	O	C	C	O	C	O	C	C	C	1512	1512
21	O	O	O	O	O	O	O	O	C	C	O	C	C	C	1440	1440
22	O	C	O	C	C	C	O	O	C	C	O	C	C	C	1374.75	1370.25
23	C	C	C	C	O	C	C	O	C	C	O	C	C	C	1315.12	1307.25
24	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1260	1260
25	O	O	C	C	O	O	C	C	C	C	O	C	C	C	1210.50	1188
26	O	C	C	O	C	C	C	C	C	C	O	C	C	C	1163.25	1158.75
27	O	O	C	C	C	C	O	O	O	O	C	C	C	C	1120.50	1107
28	O	O	O	O	O	O	C	O	O	O	C	C	C	C	1080	1080
29	C	O	O	O	O	C	C	O	O	O	C	C	C	C	1042.87	1039.50
30	O	O	O	O	O	O	O	C	O	O	C	C	C	C	1008	1008
31	O	O	C	C	C	O	O	C	O	O	C	C	C	C	976.50	945
32	O	O	O	C	C	C	O	C	O	O	C	C	C	C	945	945
33	C	O	O	O	C	O	C	C	O	O	C	C	C	C	916.87	900
34	C	O	O	C	O	C	C	C	O	O	C	C	C	C	889.87	874.12
35	O	O	O	O	O	O	O	O	C	O	C	C	C	C	864	864
36	C	O	C	O	C	O	O	O	C	O	C	C	C	C	840.37	826.87
37	C	O	O	C	O	C	O	O	C	O	C	C	C	C	817.87	796.50
38	O	O	C	C	C	C	O	O	C	O	C	C	C	C	796.50	769.50
39	O	C	C	C	O	O	C	O	C	O	C	C	C	C	776.25	742.50
40	O	O	O	O	O	C	C	O	C	O	C	C	C	C	756	756
41	O	O	O	O	C	C	C	O	C	O	C	C	C	C	738	720
42	O	O	O	O	O	O	O	C	C	O	C	C	C	C	720	720
43	O	C	C	C	O	O	O	C	C	O	C	C	C	C	704.25	661.50
44	C	O	C	C	C	O	O	C	C	O	C	C	C	C	687.37	682.87
45	O	C	O	C	O	C	O	C	C	O	C	C	C	C	672.75	639

* C = Closed or On; O = Open or Off

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TABLE 3-10. SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	C	C	C	O	C	C	O	C	C	O	C	C	C	C	658.12	624.37
47	O	O	C	O	O	O	C	C	C	O	C	C	C	C	643.50	639
48	O	O	O	O	C	O	C	C	C	O	C	C	C	C	630	630
49	C	C	O	C	C	O	C	C	C	O	C	C	C	C	617.62	594
50	O	C	C	O	O	C	C	C	C	O	C	C	C	C	605.25	582.75
51	O	O	O	O	C	C	C	C	C	O	C	C	C	C	594	540
52	C	C	O	C	C	C	C	C	C	O	C	C	C	C	581.62	577.12
53	O	O	C	O	O	O	O	O	O	C	C	C	C	C	571.50	522
54	O	C	C	C	O	O	O	O	O	C	C	C	C	C	560.25	546.75
55	C	C	C	O	C	O	O	O	O	C	C	C	C	C	550.12	533.25
56	O	O	O	O	O	C	O	O	O	C	C	C	C	C	540	540
57	O	O	O	C	O	C	O	O	O	C	C	C	C	C	531	504
58	O	O	O	O	C	C	O	O	O	C	C	C	C	C	522	486
59	O	O	O	C	C	C	O	O	O	C	C	C	C	C	513	486
60	O	O	O	O	O	O	C	O	O	C	C	C	C	C	504	504
61	C	C	C	O	O	O	C	O	O	C	C	C	C	C	496.12	472.50
62	O	C	C	C	O	O	C	O	O	C	C	C	C	C	488.25	456.75
63	C	O	C	O	C	O	C	O	O	C	C	C	C	C	480.37	456.75
64	O	O	C	C	C	O	C	O	O	C	C	C	C	C	472.50	472.50
65	O	C	O	O	O	C	C	O	O	C	C	C	C	C	465.75	432
66	O	O	O	C	O	C	C	O	O	C	C	C	C	C	459	405
67	O	C	C	C	O	C	C	O	O	C	C	C	C	C	452.25	391.50
68	O	O	C	O	C	C	C	O	O	C	C	C	C	C	445.50	391.50
69	O	C	O	C	C	C	C	O	O	C	C	C	C	C	438.75	405
70	O	O	O	O	O	O	O	C	O	C	C	C	C	C	432	432
71	C	O	C	O	O	O	O	C	O	C	C	C	C	C	426.37	393.75
72	O	C	O	C	O	O	O	C	O	C	C	C	C	C	420.75	366.75
73	C	C	C	C	O	O	O	C	O	C	C	C	C	C	415.12	351
74	O	O	C	O	C	O	O	C	O	C	C	C	C	C	409.50	346.50
75	C	O	O	C	C	O	O	C	O	C	C	C	C	C	403.87	353.25
76	O	C	C	C	C	O	O	C	O	C	C	C	C	C	398.25	371.25
77	O	C	O	O	O	C	O	C	O	C	C	C	C	C	393.75	315
78	C	C	C	O	O	O	O	C	O	C	C	C	C	C	388.12	354.37
79	C	C	O	C	O	C	O	C	O	C	C	C	C	C	383.62	317.25
80	O	O	O	O	C	C	O	C	O	C	C	C	C	C	378	378
81	O	O	C	O	C	C	O	C	O	C	C	C	C	C	373.50	360
82	O	O	O	C	C	C	O	C	O	C	C	C	C	C	369	351
83	O	O	C	C	C	C	O	C	O	C	C	C	C	C	364.50	351
84	O	O	O	O	O	O	C	C	O	C	C	C	C	C	360	360
85	C	C	O	O	O	O	C	C	O	C	C	C	C	C	356.62	283.50
86	C	C	C	O	O	O	C	C	O	C	C	C	C	C	352.12	309.37
87	C	C	O	C	O	O	C	C	O	C	C	C	C	C	347.62	344.25

* C = Closed or On; O = Open or Off

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Number of Sectors	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}	Bytes in Early Sectors	Bytes in Last Sector
88	O	C	C	C	O	O	C	C	O	C	C	C	C	C	344.25	290.25
89	C	O	O	O	C	O	C	C	O	C	C	C	C	C	340.87	243
90	C	O	C	O	C	O	C	C	O	C	C	C	C	C	336.37	302.62
91	O	O	O	C	C	O	C	C	O	C	C	C	C	C	333	270
92	C	C	O	C	C	O	C	C	O	C	C	C	C	C	329.62	244.12
93	O	C	C	C	C	O	C	C	O	C	C	C	C	C	326.25	225
94	O	C	O	O	O	C	C	C	O	C	C	C	C	C	321.75	317.25
95	C	O	C	O	O	C	C	C	O	C	C	C	C	C	318.37	312.75
96	O	O	O	C	O	C	C	C	O	C	C	C	C	C	315	315
97	O	C	O	C	O	C	C	C	O	C	C	C	C	C	312.75	216
98	C	O	C	C	O	C	C	C	O	C	C	C	C	C	309.37	230.62
99	O	O	O	O	C	C	C	C	O	C	C	C	C	C	306	252
100	C	C	O	O	C	C	C	C	O	C	C	C	C	C	302.62	280.12
101	C	O	C	O	C	C	C	C	O	C	C	C	C	C	300.37	202.50
102	O	O	O	C	C	C	C	C	O	C	C	C	C	C	297	243
103	C	C	O	C	C	C	C	C	O	C	C	C	C	C	293.62	290.25
104	C	O	C	C	C	C	C	C	O	C	C	C	C	C	291.37	228.37
105	O	O	O	O	O	O	O	O	C	C	C	C	C	C	288	288
106	O	C	O	O	O	O	O	O	C	C	C	C	C	C	285.75	236.25
107	O	O	C	O	O	O	O	O	C	C	C	C	C	C	283.50	189
108	C	C	C	O	O	O	O	O	C	C	C	C	C	C	280.12	266.62
109	C	O	O	C	O	O	O	O	C	C	C	C	C	C	277.87	229.50
110	C	C	O	C	O	O	O	O	C	C	C	C	C	C	275.62	196.87
111	C	O	C	C	O	O	O	O	C	C	C	C	C	C	273.37	168.75
112	O	O	O	O	C	O	O	O	C	C	C	C	C	C	270	270
113	O	C	O	O	C	O	O	O	C	C	C	C	C	C	267.75	252
114	O	O	C	O	C	O	O	O	C	C	C	C	C	C	265.50	238.50
115	O	C	C	O	C	O	O	O	C	C	C	C	C	C	263.25	229.50
116	O	O	O	C	C	O	O	O	C	C	C	C	C	C	261	225
117	O	C	O	C	C	O	O	O	C	C	C	C	C	C	258.75	225
118	O	O	C	C	C	O	O	O	C	C	C	C	C	C	256.50	229.50
119	O	C	C	C	C	O	O	O	C	C	C	C	C	C	254.25	238.50
120	O	O	O	O	O	C	O	O	C	C	C	C	C	C	252	252
121	C	O	O	O	O	C	O	O	C	C	C	C	C	C	250.87	135
122	C	C	O	O	O	C	O	O	C	C	C	C	C	C	248.62	156.37
123	C	O	C	O	O	C	O	O	C	C	C	C	C	C	246.37	182.25
124	C	C	C	O	O	C	O	O	C	C	C	C	C	C	244.12	212.62
125	O	O	O	C	O	C	O	O	C	C	C	C	C	C	243	108
126	O	C	O	C	O	C	O	O	C	C	C	C	C	C	240.75	146.25
127	O	O	C	C	O	C	O	O	C	C	C	C	C	C	238.50	189
128	O	C	C	C	O	C	O	O	C	C	C	C	C	C	236.25	236.25

* C = Closed or On; O = Open or Off

TABLE 3-11.   SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.814 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	C	C	C	C	O	O	C	O	O	O	C	7560	0
5	O	O	O	O	O	C	C	O	O	O	O	C	O	C	6048	0
6	O	O	O	O	C	O	C	O	O	O	C	C	O	C	5040	0
7	O	O	O	O	O	C	O	O	C	C	C	C	O	C	4320	0
8	O	O	C	C	C	C	O	O	C	O	O	O	C	C	3780	0
9	O	O	O	O	O	C	C	C	O	C	O	O	C	C	3360	0
10	O	O	O	O	C	C	O	O	O	O	C	O	C	C	3024	0
11	C	C	O	O	O	O	C	O	C	O	C	O	C	C	2749	1
12	O	O	O	C	O	C	O	O	O	C	C	O	C	C	2520	0
13	O	C	O	C	O	C	C	C	O	C	C	O	C	C	2326	2
14	O	O	O	O	C	O	O	C	C	C	C	O	C	C	2160	0
15	O	O	O	O	O	C	O	O	O	O	O	C	C	C	2016	0
16	O	C	C	C	C	O	O	C	O	O	O	C	C	C	1890	0
17	O	C	C	C	O	O	O	O	C	O	O	C	C	C	1778	14
18	O	O	O	O	C	C	C	O	C	O	O	C	C	C	1680	0
19	C	O	O	C	O	O	C	C	C	O	O	C	C	C	1591	11
20	O	O	O	C	C	O	O	O	O	C	O	C	C	C	1512	0
21	O	O	O	O	O	C	C	O	O	C	O	C	C	C	1440	0
22	O	C	O	O	O	C	O	O	C	C	O	C	C	C	1374	12
23	O	C	C	C	C	O	C	C	O	C	O	C	C	C	1314	18
24	O	O	C	O	C	O	O	O	C	C	O	C	C	C	1260	0
25	C	C	C	O	O	O	C	O	C	C	O	C	C	C	1209	15
26	C	O	C	O	C	C	C	O	C	C	O	C	C	C	1163	2
27	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1120	0
28	O	O	O	C	O	O	C	C	C	C	O	C	C	C	1080	0
29	O	C	C	C	O	C	C	C	C	C	O	C	C	C	1042	22
30	O	O	O	O	C	O	O	O	O	O	C	C	C	C	1008	0
31	C	O	O	O	C	C	O	O	O	O	C	C	C	C	975	15
32	C	C	C	C	O	O	C	O	O	O	C	C	C	C	945	0
33	O	O	C	C	O	C	C	O	O	O	C	C	C	C	916	12
34	C	C	C	O	O	O	O	C	O	O	C	C	C	C	889	14
35	O	O	O	O	O	C	O	C	O	O	C	C	C	C	864	0
36	O	O	O	C	C	C	O	C	O	O	C	C	C	C	840	0
37	C	C	C	C	O	O	C	C	O	O	C	C	C	C	817	11
38	C	O	C	O	O	C	C	C	O	O	C	C	C	C	795	30
39	C	O	O	C	C	C	C	C	O	O	C	C	C	C	775	15
40	O	O	C	C	O	O	O	O	C	O	C	C	C	C	756	0
41	C	C	C	C	C	O	O	O	C	O	C	C	C	C	737	23
42	O	O	O	O	C	C	O	O	C	O	C	C	C	C	720	0
43	C	O	O	O	O	O	C	O	C	O	C	C	C	C	703	11
44	C	O	O	O	C	O	C	O	C	O	C	C	C	C	687	12
45	O	O	O	O	O	C	C	O	C	O	C	C	C	C	672	0

* C = Closed or On; O = Open or Off

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TABLE 3-11.   SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.814 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	C	C	C	C	O	C	C	O	C	O	C	C	C	C	657	18
47	C	O	C	C	C	C	C	O	C	O	C	C	C	C	643	19
48	O	C	O	C	O	O	O	C	C	O	C	C	C	C	630	0
49	C	C	C	O	C	O	O	C	C	O	C	C	C	C	617	7
50	O	O	C	O	O	C	O	C	C	O	C	C	C	C	604	40
51	O	O	O	O	C	C	O	C	C	O	C	C	C	C	592	48
52	C	C	O	C	C	C	O	C	C	O	C	C	C	C	581	28
53	O	C	C	O	O	O	C	C	C	O	C	C	C	C	570	30
54	O	O	O	O	C	O	C	C	C	O	C	C	C	C	560	0
55	C	C	O	C	C	O	C	C	C	O	C	C	C	C	549	45
56	O	O	C	O	O	C	C	C	C	O	C	C	C	C	540	0
57	O	C	C	C	O	C	C	C	C	O	C	C	C	C	530	30
58	C	C	C	O	C	C	C	C	C	O	C	C	C	C	521	22
59	O	O	O	O	O	O	O	O	O	C	C	C	C	C	512	32
60	O	O	O	C	O	O	O	O	O	C	C	C	C	C	504	0
61	C	O	O	O	C	O	O	O	O	C	C	C	C	C	495	45
62	C	O	O	C	C	O	O	O	O	C	C	C	C	C	487	46
63	O	O	O	O	O	C	O	O	O	C	C	C	C	C	480	0
64	O	O	O	C	O	C	O	O	O	C	C	C	C	C	472	32
65	C	C	C	C	O	C	O	O	O	C	C	C	C	C	465	15
66	O	C	C	O	C	C	O	O	O	C	C	C	C	C	458	12
67	C	O	C	C	C	C	O	O	O	C	C	C	C	C	451	23
68	O	O	C	O	O	O	C	O	O	C	C	C	C	C	444	48
69	O	C	O	C	O	O	C	O	O	C	C	C	C	C	438	18
70	O	O	O	O	C	O	C	O	O	C	C	C	C	C	432	0
71	C	C	C	O	C	O	C	O	O	C	C	C	C	C	425	65
72	O	O	C	C	C	O	C	O	O	C	C	C	C	C	420	0
73	O	C	O	O	O	C	C	O	O	C	C	C	C	C	414	18
74	O	O	O	C	O	C	C	O	O	C	C	C	C	C	408	48
75	C	O	C	C	O	C	C	O	O	C	C	C	C	C	403	15
76	C	C	O	O	C	C	C	O	O	C	C	C	C	C	397	68
77	O	O	O	C	C	C	C	O	O	C	C	C	C	C	392	56
78	C	O	C	C	C	C	C	O	O	C	C	C	C	C	387	54
79	O	C	O	O	O	O	O	C	O	C	C	C	C	C	382	62
80	O	C	C	O	O	O	O	C	O	C	C	C	C	C	378	0
81	C	C	O	C	O	O	O	C	O	C	C	C	C	C	373	27
82	O	O	O	O	C	O	O	C	O	C	C	C	C	C	368	64
83	O	O	C	O	C	O	O	C	O	C	C	C	C	C	364	28
84	O	O	O	C	C	O	O	C	O	C	C	C	C	C	360	0
85	C	O	C	C	C	O	O	C	O	C	C	C	C	C	355	65
86	C	O	O	O	O	C	O	C	O	C	C	C	C	C	351	54
87	C	O	C	O	O	C	O	C	O	C	C	C	C	C	347	51

* C = Closed or On; O = Open or Off

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TABLE 3-11. SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.814 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	O	O	C	O	C	O	C	O	C	C	C	C	C	343	56
89	C	O	C	C	O	C	O	C	O	C	C	C	C	C	339	69
90	O	O	O	O	C	C	O	C	O	C	C	C	C	C	336	0
91	O	O	C	O	C	C	O	C	O	C	C	C	C	C	332	28
92	O	O	O	C	C	C	O	C	O	C	C	C	C	C	328	64
93	C	C	O	C	C	C	O	C	O	C	C	C	C	C	325	15
94	C	C	C	C	C	C	O	C	O	C	C	C	C	C	321	66
95	O	C	O	O	O	O	C	C	O	C	C	C	C	C	318	30
96	C	O	C	O	O	O	C	C	O	C	C	C	C	C	315	0
97	C	O	O	C	O	O	C	C	O	C	C	C	C	C	311	73
98	O	O	C	C	O	O	C	C	O	C	C	C	C	C	308	56
99	C	C	C	C	O	O	C	C	O	C	C	C	C	C	305	45
100	O	C	O	O	C	O	C	C	O	C	C	C	C	C	302	40
101	C	O	C	O	C	O	C	C	O	C	C	C	C	C	299	41
102	O	O	O	C	C	O	C	C	O	C	C	C	C	C	296	48
103	C	C	O	C	C	O	C	C	O	C	C	C	C	C	293	61
104	O	C	C	C	C	O	C	C	O	C	C	C	C	C	290	80
105	O	O	O	O	O	C	C	C	O	C	C	C	C	C	288	0
106	C	C	O	O	O	C	C	C	O	C	C	C	C	C	285	30
107	O	C	C	O	O	C	C	C	O	C	C	C	C	C	282	66
108	O	O	O	C	O	C	C	C	O	C	C	C	C	C	280	0
109	C	C	O	C	O	C	C	C	O	C	C	C	C	C	277	47
110	O	C	C	C	O	C	C	C	O	C	C	C	C	C	274	100
111	O	O	O	O	C	C	C	C	O	C	C	C	C	C	272	48
112	O	C	O	O	C	C	C	C	O	C	C	C	C	C	270	0
113	C	O	C	O	C	C	C	C	O	C	C	C	C	C	267	69
114	C	C	C	O	C	C	C	C	O	C	C	C	C	C	265	30
115	O	C	O	C	C	C	C	C	O	C	C	C	C	C	262	110
116	O	O	C	C	C	C	C	C	O	C	C	C	C	C	260	80
117	O	C	C	C	C	C	C	C	O	C	C	C	C	C	258	54
118	O	O	O	O	O	O	O	O	C	C	C	C	C	C	256	32
119	O	C	O	O	O	O	O	O	C	C	C	C	C	C	254	14
120	O	O	C	O	O	O	O	O	C	C	C	C	C	C	252	0
121	C	C	C	O	O	O	O	O	C	C	C	C	C	C	249	111
122	C	O	O	C	O	O	O	O	C	C	C	C	C	C	247	106
123	C	C	O	C	O	O	O	O	C	C	C	C	C	C	245	105
124	C	O	C	C	O	O	O	O	C	C	C	C	C	C	243	108
125	C	C	C	C	O	O	O	O	C	C	C	C	C	C	241	115
126	O	O	O	O	C	O	O	O	C	C	C	C	C	C	240	0
127	O	C	O	O	C	O	O	O	C	C	C	C	C	C	238	14
128	O	O	C	O	C	O	O	O	C	C	C	C	C	C	236	32

* C = Closed or On; O = Open or Off

TABLE 3-12. SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.814 MHz (BYTE) CLOCK AND ROUND-UP METHOD

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	C	C	C	C	O	O	C	O	O	O	C	7560	7560
5	O	O	O	O	O	C	C	O	O	O	O	C	O	C	6048	6048
6	O	O	O	O	C	O	C	O	O	O	C	C	O	C	5040	5040
7	O	O	O	O	O	C	O	O	C	C	C	C	O	C	4320	4320
8	O	O	C	C	C	C	O	O	C	O	O	O	C	C	3780	3780
9	O	O	O	O	O	C	C	C	O	C	O	O	C	C	3360	3360
10	O	O	O	O	C	C	O	O	O	O	C	O	C	C	3024	3024
11	O	C	O	O	O	O	C	O	C	O	C	O	C	C	2750	2740
12	O	O	O	C	O	C	O	O	O	C	C	O	C	C	2520	2520
13	C	O	O	C	O	C	C	C	O	C	C	O	C	C	2327	2316
14	O	O	O	O	C	O	O	C	C	C	C	O	C	C	2160	2160
15	O	O	O	O	O	C	O	O	O	O	O	C	C	C	2016	2016
16	O	C	C	C	C	O	O	C	O	O	O	C	C	C	1890	1890
17	C	O	C	C	O	O	O	O	C	O	O	C	C	C	1779	1776
18	O	O	O	O	C	C	C	O	C	O	O	C	C	C	1680	1680
19	O	O	O	C	O	O	C	C	C	O	O	C	C	C	1592	1584
20	O	O	O	C	C	O	O	O	O	C	O	C	C	C	1512	1512
21	O	O	O	O	O	C	C	O	O	C	O	C	C	C	1440	1440
22	C	O	O	O	O	C	O	C	O	C	O	C	C	C	1375	1365
23	C	O	C	C	C	O	C	C	O	C	O	C	C	C	1315	1310
24	O	O	C	O	C	O	O	O	C	C	O	C	C	C	1260	1260
25	O	C	C	O	O	O	C	O	C	C	O	C	C	C	1210	1200
26	O	O	C	O	C	C	C	O	C	C	O	C	C	C	1164	1140
27	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1120	1120
28	O	O	O	C	O	O	C	C	C	C	O	C	C	C	1080	1080
29	C	O	C	C	O	C	C	C	C	C	O	C	C	C	1043	1036
30	O	O	O	O	C	O	O	O	O	O	C	C	C	C	1008	1008
31	O	O	O	O	C	C	O	O	O	O	C	C	C	C	976	960
32	C	C	C	C	O	O	C	O	O	O	C	C	C	C	945	945
33	C	C	O	C	O	C	C	O	O	O	C	C	C	C	917	896
34	O	C	C	O	O	O	O	C	O	O	C	C	C	C	890	870
35	O	O	O	O	O	C	O	C	O	O	C	C	C	C	864	864
36	O	O	O	C	C	C	O	C	O	O	C	C	C	C	840	840
37	O	C	C	C	O	O	C	C	O	O	C	C	C	C	818	792
38	O	O	C	O	O	C	C	C	O	O	C	C	C	C	796	788
39	O	O	O	C	C	C	C	C	O	O	C	C	C	C	776	752
40	O	O	C	C	O	O	O	O	C	O	C	C	C	C	756	756
41	O	C	C	C	C	O	O	O	C	O	C	C	C	C	738	720
42	O	O	O	O	C	C	O	O	C	O	C	C	C	C	720	720
43	O	O	O	O	O	O	C	O	C	O	C	C	C	C	704	672
44	O	O	O	O	C	O	C	O	C	O	C	C	C	C	688	656
45	O	O	O	O	O	C	C	O	C	O	C	C	C	C	672	672

* C = Closed or On; O = Open or Off

—————— Continued ——————

TABLE 3-12.   SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.814 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	O	C	C	C	O	C	C	O	C	O	C	C	C	C	658	630
47	O	O	C	C	C	C	C	O	C	O	C	C	C	C	644	616
48	O	C	O	C	O	O	O	C	C	O	C	C	C	C	630	630
49	O	C	C	O	C	O	O	C	C	O	C	C	C	C	618	576
50	C	C	O	O	O	C	O	C	C	O	C	C	C	C	605	595
51	C	C	C	C	O	C	O	C	C	O	C	C	C	C	593	590
52	O	C	O	C	C	C	O	C	C	O	C	C	C	C	582	558
53	C	O	C	O	O	O	C	C	C	O	C	C	C	C	571	548
54	O	O	O	O	C	O	C	C	C	O	C	C	C	C	560	560
55	O	C	O	C	C	O	C	C	C	O	C	C	C	C	550	540
56	O	O	O	O	O	C	C	C	C	O	C	C	C	C	540	540
57	C	O	C	C	O	C	C	C	C	O	C	C	C	C	531	504
58	O	C	C	O	C	C	C	C	C	O	C	C	C	C	522	486
59	C	C	C	C	C	C	C	C	C	O	C	C	C	C	513	486
60	O	O	O	C	O	O	O	O	O	C	C	C	C	C	504	504
61	O	O	O	O	C	O	O	O	O	C	C	C	C	C	496	480
62	O	O	O	C	C	O	O	O	O	C	C	C	C	C	488	472
63	O	O	O	O	O	C	O	O	O	C	C	C	C	C	480	480
64	C	C	C	O	O	C	O	O	O	C	C	C	C	C	473	441
65	O	C	C	C	O	C	O	O	O	C	C	C	C	C	466	416
66	C	O	C	O	C	C	O	O	O	C	C	C	C	C	459	405
67	O	O	C	C	C	C	O	O	O	C	C	C	C	C	452	408
68	C	C	O	O	O	O	C	O	O	C	C	C	C	C	445	425
69	C	O	O	C	O	O	C	O	O	C	C	C	C	C	439	388
70	O	O	O	O	C	O	C	O	O	C	C	C	C	C	432	432
71	O	C	C	O	C	O	C	O	O	C	C	C	C	C	426	420
72	O	O	C	C	C	O	C	O	O	C	C	C	C	C	420	420
73	C	O	O	O	O	C	C	O	O	C	C	C	C	C	415	360
74	C	C	C	O	O	C	C	O	O	C	C	C	C	C	409	383
75	O	O	C	C	O	C	C	O	O	C	C	C	C	C	404	344
76	O	C	O	O	C	C	C	O	O	C	C	C	C	C	398	390
77	C	C	C	O	C	C	C	O	O	C	C	C	C	C	393	372
78	O	O	C	C	C	C	C	O	O	C	C	C	C	C	388	364
79	C	O	O	O	O	O	O	C	O	C	C	C	C	C	383	366
80	O	C	C	O	O	O	O	C	O	C	C	C	C	C	378	378
81	O	C	O	C	O	O	O	C	O	C	C	C	C	C	374	320
82	C	C	C	C	O	O	O	C	O	C	C	C	C	C	369	351
83	C	C	O	O	C	O	O	C	O	C	C	C	C	C	365	310
84	O	O	O	C	C	O	O	C	O	C	C	C	C	C	360	360
85	O	O	C	C	C	O	O	C	O	C	C	C	C	C	356	336
86	O	O	O	O	O	C	O	C	O	C	C	C	C	C	352	320
87	O	O	C	O	O	C	O	C	O	C	C	C	C	C	348	312

* C = Closed or On; O = Open or Off

———— Continued ————

83325710 C

TABLE 3-12. SECTOR SELECT SWITCH SETTINGS -- 736 MB DRIVES
USING 1.814 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	O	O	O	C	O	C	O	C	O	C	C	C	C	C	344	312
89	O	O	C	C	O	C	O	C	O	C	C	C	C	C	340	320
90	O	O	O	O	C	C	O	C	O	C	C	C	C	C	336	336
91	C	C	O	O	C	C	O	C	O	C	C	C	C	C	333	270
92	C	C	C	O	C	C	O	C	O	C	C	C	C	C	329	301
93	O	C	O	C	C	C	O	C	O	C	C	C	C	C	326	248
94	O	C	C	C	C	C	O	C	O	C	C	C	C	C	322	294
95	C	O	O	O	O	O	C	C	O	C	C	C	C	C	319	254
96	C	O	C	O	O	O	C	C	O	C	C	C	C	C	315	315
97	O	O	O	C	O	O	C	C	O	C	C	C	C	C	312	288
98	C	C	O	C	O	O	C	C	O	C	C	C	C	C	309	267
99	O	C	C	C	O	O	C	C	O	C	C	C	C	C	306	252
100	C	O	O	O	C	O	C	C	O	C	C	C	C	C	303	243
101	O	O	C	O	C	O	C	C	O	C	C	C	C	C	300	240
102	C	C	C	O	C	O	C	C	O	C	C	C	C	C	297	243
103	O	C	O	C	C	O	C	C	O	C	C	C	C	C	294	252
104	C	O	C	C	C	O	C	C	O	C	C	C	C	C	291	267
105	O	O	O	O	O	C	C	C	O	C	C	C	C	C	288	288
106	O	C	O	O	O	C	C	C	O	C	C	C	C	C	286	210
107	C	O	C	O	O	C	C	C	O	C	C	C	C	C	283	242
108	O	O	O	C	O	C	C	C	O	C	C	C	C	C	280	280
109	O	C	O	C	O	C	C	C	O	C	C	C	C	C	278	216
110	C	O	C	C	O	C	C	C	O	C	C	C	C	C	275	265
111	C	C	C	C	O	C	C	C	O	C	C	C	C	C	273	210
112	O	C	O	O	C	C	C	C	O	C	C	C	C	C	270	270
113	O	O	C	O	C	C	C	C	O	C	C	C	C	C	268	224
114	O	C	C	O	C	C	C	C	O	C	C	C	C	C	266	182
115	C	O	O	C	C	C	C	C	O	C	C	C	C	C	263	258
116	C	C	O	C	C	C	C	C	O	C	C	C	C	C	261	225
117	C	O	C	C	C	C	C	C	O	C	C	C	C	C	259	196
118	C	C	C	C	C	C	C	C	O	C	C	C	C	C	257	171
119	C	O	O	O	O	O	O	O	C	C	C	C	C	C	255	150
120	O	O	C	O	O	O	O	O	C	C	C	C	C	C	252	252
121	O	C	C	O	O	O	O	O	C	C	C	C	C	C	250	240
122	O	O	O	C	O	O	O	O	C	C	C	C	C	C	248	232
123	O	C	O	C	O	O	O	O	C	C	C	C	C	C	246	228
124	O	O	C	C	O	O	O	O	C	C	C	C	C	C	244	228
125	O	C	C	C	O	O	O	O	C	C	C	C	C	C	242	232
126	O	O	O	O	C	O	O	O	C	C	C	C	C	C	240	240
127	C	O	O	O	C	O	O	O	C	C	C	C	C	C	239	126
128	C	C	O	O	C	O	O	O	C	C	C	C	C	C	237	141

* C = Closed or On; O = Open or Off

TABLE 3-13.   SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	O	O	C	O	C	O	C	O	O	C	10272	0
5	O	C	O	C	C	O	O	C	O	C	O	C	O	C	8217	3
6	C	C	O	C	O	C	O	O	O	C	C	C	O	C	6847.50	3
7	C	C	C	O	C	C	O	C	O	O	O	O	C	C	5869.50	1.50
8	O	O	O	O	O	C	O	C	O	C	O	O	C	C	5136	0
9	C	O	C	C	C	O	O	O	O	O	C	O	C	C	4564.50	7.50
10	C	O	C	C	O	O	C	O	C	O	C	O	C	C	4108.50	3
11	O	C	C	O	O	O	C	O	O	C	C	O	C	C	3735	3
12	O	C	C	O	C	O	O	O	C	C	C	O	C	C	3423	12
13	C	O	C	O	O	O	C	C	C	C	C	O	C	C	3160.50	1.50
14	O	O	C	C	C	O	C	O	O	O	O	C	C	C	2934	12
15	O	C	C	C	C	O	C	C	O	O	O	C	C	C	2739	3
16	O	O	O	O	C	O	C	O	C	O	O	C	C	C	2568	0
17	C	O	C	O	C	C	O	C	C	O	O	C	C	C	2416.50	7.50
18	C	C	C	C	O	O	O	O	O	C	O	C	C	C	2281.50	21
19	C	C	C	C	C	O	C	O	O	C	O	C	C	C	2161.50	19.50
20	C	C	C	O	O	C	O	C	O	C	O	C	C	C	2053.50	18
21	O	O	O	C	O	C	C	C	O	C	O	C	C	C	1956	12
22	C	C	O	O	O	C	O	O	C	C	O	C	C	C	1867.50	3
23	O	C	O	C	C	O	C	O	C	C	O	C	C	C	1785	33
24	C	C	O	C	O	O	O	C	C	C	O	C	C	C	1711.50	12
25	C	O	O	C	C	C	O	C	C	C	O	C	C	C	1642.50	25.50
26	C	C	O	O	O	C	C	C	C	C	O	C	C	C	1579.50	21
27	O	C	O	C	O	O	O	O	O	O	C	C	C	C	1521	21
28	O	C	C	C	O	C	O	O	O	O	C	C	C	C	1467	12
29	O	O	O	O	C	O	C	O	O	O	C	C	C	C	1416	24
30	C	C	C	C	O	C	C	O	O	O	C	C	C	C	1369.50	3
31	C	O	C	C	O	O	O	C	O	O	C	C	C	C	1324.50	28.50
32	O	O	O	C	O	C	O	C	O	O	C	C	C	C	1284	0
33	O	C	O	O	O	O	C	C	O	O	C	C	C	C	1245	3
34	C	C	O	C	C	O	C	C	O	O	C	C	C	C	1207.50	33
35	O	C	O	O	C	C	C	C	O	O	C	C	C	C	1173	33
36	O	O	O	C	O	O	O	O	C	O	C	C	C	C	1140	48
37	O	O	C	C	C	O	O	O	C	O	C	C	C	C	1110	18
38	O	O	O	O	C	C	O	O	C	O	C	C	C	C	1080	48
39	O	C	O	O	O	O	C	O	C	O	C	C	C	C	1053	21
40	O	O	C	O	C	O	C	O	C	O	C	C	C	C	1026	48
41	O	O	C	O	O	C	C	O	C	O	C	C	C	C	1002	6
42	O	O	C	O	C	C	C	O	C	O	C	C	C	C	978	12
43	C	C	O	O	O	O	O	C	C	O	C	C	C	C	955.50	1.50
44	O	C	O	O	C	O	O	C	C	O	C	C	C	C	933	36
45	O	O	O	O	O	C	O	C	C	O	C	C	C	C	912	48

* C = Closed or On; O = Open or Off

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TABLE 3-13. SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	C	O	C	C	O	C	O	C	C	O	C	C	C	C	892.50	33
47	O	C	O	C	C	C	O	C	C	O	C	C	C	C	873	57
48	O	C	C	O	O	O	C	C	C	O	C	C	C	C	855	48
49	C	O	O	O	C	O	C	C	C	O	C	C	C	C	838.50	1.50
50	C	O	C	C	C	O	C	C	C	O	C	C	C	C	820.50	63
51	C	C	C	O	O	C	C	C	C	O	C	C	C	C	805.50	7.50
52	O	C	O	O	C	C	C	C	C	O	C	C	C	C	789	60
53	O	O	C	C	C	C	C	C	C	O	C	C	C	C	774	66
54	C	O	C	O	O	O	O	O	O	C	C	C	C	C	760.50	21
55	O	C	C	C	O	C	O	O	O	C	C	C	C	C	747	3
56	C	C	C	O	C	O	O	O	O	C	C	C	C	C	733.50	12
57	O	O	O	O	O	C	O	O	O	C	C	C	C	C	720	48
58	O	O	O	C	O	C	O	O	O	C	C	C	C	C	708	24
59	O	O	O	O	C	C	O	O	O	C	C	C	C	C	696	24
60	O	O	O	C	C	C	O	O	O	C	C	C	C	C	684	48
61	C	C	C	C	C	C	O	O	O	C	C	C	C	C	673.50	4.50
62	C	C	C	O	O	O	C	O	O	C	C	C	C	C	661.50	75
63	O	C	C	C	O	O	C	O	O	C	C	C	C	C	651	75
64	O	O	C	O	C	O	C	O	O	C	C	C	C	C	642	0
65	C	C	O	C	C	O	C	O	O	C	C	C	C	C	631.50	40.50
66	C	O	O	O	O	C	C	O	O	C	C	C	C	C	622.50	3
67	O	O	O	C	O	C	C	O	O	C	C	C	C	C	612	84
68	O	C	C	C	O	C	C	O	O	C	C	C	C	C	603	84
69	O	O	C	O	C	C	C	O	O	C	C	C	C	C	594	102
70	C	O	O	C	C	C	C	O	O	C	C	C	C	C	586.50	33
71	C	C	C	C	C	C	C	O	O	C	C	C	C	C	577.50	85.50
72	O	O	C	O	O	O	O	C	O	C	C	C	C	C	570	48
73	C	O	O	C	O	O	O	C	O	C	C	C	C	C	562.50	25.50
74	O	C	C	C	O	O	O	C	O	C	C	C	C	C	555	18
75	C	C	O	O	C	O	O	C	O	C	C	C	C	C	547.50	25.50
76	O	O	O	C	C	O	O	C	O	C	C	C	C	C	540	48
77	C	O	C	C	C	O	O	C	O	C	C	C	C	C	532.50	85.50
78	C	O	O	O	O	C	O	C	O	C	C	C	C	C	526.50	21
79	O	C	C	O	O	C	O	C	O	C	C	C	C	C	519	87
80	O	C	O	C	O	C	O	C	O	C	C	C	C	C	513	48
81	O	C	C	C	O	C	O	C	O	C	C	C	C	C	507	21
82	O	C	O	O	C	C	O	C	O	C	C	C	C	C	501	6
83	O	C	C	O	C	C	O	C	O	C	C	C	C	C	495	3
84	O	C	O	C	C	C	O	C	O	C	C	C	C	C	489	12
85	O	C	C	C	C	C	O	C	O	C	C	C	C	C	483	33
86	O	C	O	O	O	O	C	C	O	C	C	C	C	C	477	66
87	O	C	C	O	O	O	C	C	O	C	C	C	C	C	471	111

* C = Closed or On; O = Open or Off

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	O	O	C	O	O	C	C	O	C	C	C	C	C	466.50	36
89	C	O	C	C	O	O	C	C	O	C	C	C	C	C	460.50	103.50
90	O	O	O	O	C	O	C	C	O	C	C	C	C	C	456	48
91	C	C	O	O	C	O	C	C	O	C	C	C	C	C	451.50	1.50
92	C	C	C	O	C	O	C	C	O	C	C	C	C	C	445.50	102
93	O	C	O	C	C	O	C	C	O	C	C	C	C	C	441	75
94	C	O	C	C	C	O	C	C	O	C	C	C	C	C	436.50	57
95	O	O	O	O	O	C	C	C	O	C	C	C	C	C	432	48
96	C	C	O	O	O	C	C	C	O	C	C	C	C	C	427.50	48
97	O	C	C	O	O	C	C	C	O	C	C	C	C	C	423	57
98	C	O	O	C	O	C	C	C	O	C	C	C	C	C	418.50	75
99	O	O	C	C	O	C	C	C	O	C	C	C	C	C	414	102
100	C	C	C	C	O	C	C	C	O	C	C	C	C	C	409.50	138
101	C	O	O	O	C	O	C	C	O	C	C	C	C	C	406.50	31.50
102	O	O	C	O	C	C	C	C	O	C	C	C	C	C	402	84
103	C	C	C	O	C	C	C	C	O	C	C	C	C	C	397.50	145.50
104	C	O	O	C	C	C	C	C	O	C	C	C	C	C	394.50	60
105	O	O	C	C	C	C	C	C	O	C	C	C	C	C	390	138
106	O	C	C	C	C	C	C	C	O	C	C	C	C	C	387	66
107	O	O	O	O	O	O	O	O	C	C	C	C	C	C	384	0
108	C	C	O	O	O	O	O	O	C	C	C	C	C	C	379.50	102
109	C	O	C	O	O	O	O	O	C	C	C	C	C	C	376.50	49.50
110	C	C	C	O	O	O	O	O	C	C	C	C	C	C	373.50	3
111	O	C	O	C	O	O	O	O	C	C	C	C	C	C	369	129
112	O	O	C	C	O	O	O	O	C	C	C	C	C	C	366	96
113	O	C	C	C	O	O	O	O	C	C	C	C	C	C	363	69
114	O	O	O	O	C	O	O	O	C	C	C	C	C	C	360	48
115	O	C	O	O	C	O	O	O	C	C	C	C	C	C	357	33
116	O	O	C	O	C	O	O	O	C	C	C	C	C	C	354	24
117	O	C	C	O	C	O	O	O	C	C	C	C	C	C	351	21
118	O	O	O	C	C	O	O	O	C	C	C	C	C	C	348	24
119	O	C	O	C	C	O	O	O	C	C	C	C	C	C	345	33
120	O	O	C	C	C	O	O	O	C	C	C	C	C	C	342	48
121	O	C	C	C	C	O	O	O	C	C	C	C	C	C	339	69
122	O	O	O	O	O	C	O	O	C	C	C	C	C	C	336	96
123	O	C	O	O	O	C	O	O	C	C	C	C	C	C	333	129
124	O	O	C	O	O	C	O	O	C	C	C	C	C	C	330	168
125	C	O	C	O	O	C	O	O	C	C	C	C	C	C	328.50	25.50
126	C	C	C	O	O	C	O	O	C	C	C	C	C	C	325.50	75
127	C	O	O	C	O	C	O	O	C	C	C	C	C	C	322.50	130.50
128	O	C	O	C	O	C	O	O	C	C	C	C	C	C	321	0

* C = Closed or On; O = Open or Off

TABLE 3-14. SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-UP METHOD

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	O	O	C	O	C	O	C	O	O	C	10272	10272
5	C	O	O	C	C	O	O	C	O	C	O	C	O	C	8218.50	8214
6	O	C	O	C	O	C	O	O	O	C	C	C	O	C	6849	6843
7	O	C	C	O	C	C	O	C	O	O	O	O	C	C	5871	5862
8	O	O	O	O	O	C	O	C	O	C	O	O	C	C	5136	5136
9	O	O	C	C	C	O	O	O	O	O	C	O	C	C	4566	4560
10	O	O	C	C	O	O	C	O	C	O	C	O	C	C	4110	4098
11	C	O	C	O	O	O	C	O	O	C	C	O	C	C	3736.50	3723
12	C	O	C	O	C	O	O	O	C	C	C	O	C	C	3424.50	3418.50
13	O	O	C	O	O	O	C	C	C	C	C	O	C	C	3162	3144
14	C	C	O	C	C	O	C	O	O	O	O	C	C	C	2935.50	2926.50
15	C	O	C	C	C	O	C	C	O	O	O	C	C	C	2740.50	2721
16	O	O	O	O	C	O	C	O	C	O	O	C	C	C	2568	2568
17	O	O	C	O	C	C	O	C	C	O	O	C	C	C	2418	2400
18	O	C	C	C	O	O	O	O	O	C	O	C	C	C	2283	2277
19	O	C	C	C	C	O	C	O	O	C	O	C	C	C	2163	2154
20	O	C	C	O	O	C	O	C	O	C	O	C	C	C	2055	2043
21	C	C	C	O	O	C	C	C	O	C	O	C	C	C	1957.50	1938
22	O	C	O	O	O	C	O	O	C	C	O	C	C	C	1869	1839
23	C	O	O	C	C	O	C	O	C	C	O	C	C	C	1786.50	1785
24	O	C	O	C	O	O	O	C	C	C	O	C	C	C	1713	1689
25	O	O	O	C	C	C	O	C	C	C	O	C	C	C	1644	1632
26	O	C	O	O	O	C	C	C	C	C	O	C	C	C	1581	1563
27	C	O	O	C	O	O	O	O	O	O	C	C	C	C	1522.50	1503
28	C	O	C	C	O	C	O	O	O	O	C	C	C	C	1468.50	1438.50
29	C	C	C	C	O	O	C	O	O	O	C	C	C	C	1417.50	1398
30	O	C	C	C	O	C	C	O	O	O	C	C	C	C	1371	1329
31	O	O	C	C	O	O	O	C	O	O	C	C	C	C	1326	1308
32	O	O	O	C	O	C	O	C	O	O	C	C	C	C	1284	1284
33	C	O	O	O	O	O	C	C	O	O	C	C	C	C	1246.50	1200
34	O	C	O	C	C	O	C	C	O	O	C	C	C	C	1209	1191
35	C	O	O	O	C	C	C	C	O	O	C	C	C	C	1174.50	1155
36	C	C	C	O	O	O	O	O	C	O	C	C	C	C	1141.50	1135.50
37	C	C	O	C	C	O	O	O	C	O	C	C	C	C	1111.50	1074
38	C	C	C	C	O	C	O	O	C	O	C	C	C	C	1081.50	1072.50
39	C	O	O	O	O	O	C	O	C	O	C	C	C	C	1054.50	1017
40	C	C	O	O	C	O	C	O	C	O	C	C	C	C	1027.50	1015.50
41	C	C	O	O	O	C	C	O	C	O	C	C	C	C	1003.50	948
42	C	C	O	O	C	C	C	O	C	O	C	C	C	C	979.50	928.50
43	O	C	O	O	O	O	O	C	C	O	C	C	C	C	957	894
44	C	O	O	O	C	O	O	C	C	O	C	C	C	C	934.50	904.50
45	C	C	C	C	C	O	O	C	C	O	C	C	C	C	913.50	894

* C = Closed or On; O = Open or Off

———— Continued ————

TABLE 3-14. SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}	Bytes in Early Sectors	Bytes in Last Sector
46	O	O	C	C	O	C	O	C	C	O	C	C	C	C	894	858
47	C	O	O	C	C	C	O	C	C	O	C	C	C	C	874.50	861
48	C	O	C	O	O	O	C	C	C	O	C	C	C	C	856.50	832.50
49	O	O	O	O	C	O	C	C	C	O	C	C	C	C	840	768
50	O	O	C	C	C	O	C	C	C	O	C	C	C	C	822	810
51	O	C	C	O	O	C	C	C	C	O	C	C	C	C	807	738
52	C	O	O	O	C	C	C	C	C	O	C	C	C	C	790.50	772.50
53	C	C	O	C	C	C	C	C	C	O	C	C	C	C	775.50	762
54	O	O	C	O	O	O	O	O	O	C	C	C	C	C	762	702
55	C	O	C	C	O	O	O	O	O	C	C	C	C	C	748.50	669
56	O	C	C	O	C	O	O	O	O	C	C	C	C	C	735	663
57	C	C	C	C	C	O	O	O	O	C	C	C	C	C	721.50	684
58	C	C	C	O	O	C	O	O	O	C	C	C	C	C	709.50	646.50
59	C	C	C	C	O	C	O	O	O	C	C	C	C	C	697.50	633
60	C	C	C	O	C	C	O	O	O	C	C	C	C	C	685.50	643.50
61	O	C	C	C	C	C	O	O	O	C	C	C	C	C	675	588
62	O	C	C	O	O	O	C	O	O	C	C	C	C	C	663	645
63	C	O	C	C	O	O	C	O	O	C	C	C	C	C	652.50	633
64	O	O	C	O	C	O	C	O	O	C	C	C	C	C	642	642
65	O	C	O	C	C	O	C	O	O	C	C	C	C	C	633	576
66	O	O	O	O	O	C	C	O	O	C	C	C	C	C	624	528
67	C	C	C	O	O	C	C	O	O	C	C	C	C	C	613.50	597
68	C	O	C	C	O	C	C	O	O	C	C	C	C	C	604.50	586.50
69	C	C	O	O	C	C	C	O	O	C	C	C	C	C	595.50	594
70	O	O	O	C	C	C	C	O	O	C	C	C	C	C	588	516
71	O	C	C	C	C	C	C	O	O	C	C	C	C	C	579	558
72	C	C	O	O	O	O	O	C	O	C	C	C	C	C	571.50	511.50
73	O	O	O	C	O	O	O	C	O	C	C	C	C	C	564	480
74	C	O	C	C	O	O	O	C	O	C	C	C	C	C	556.50	463.50
75	O	C	O	O	C	O	O	C	O	C	C	C	C	C	549	462
76	C	C	C	O	C	O	O	C	O	C	C	C	C	C	541.50	475.50
77	O	O	C	C	C	O	O	C	O	C	C	C	C	C	534	504
78	O	O	O	O	O	C	O	C	O	C	C	C	C	C	528	432
79	C	O	C	O	O	C	O	C	O	C	C	C	C	C	520.50	489
80	C	O	O	C	O	C	O	C	O	C	C	C	C	C	514.50	442.50
81	C	O	C	C	O	C	O	C	O	C	C	C	C	C	508.50	408
82	C	O	O	O	C	C	O	C	O	C	C	C	C	C	502.50	385.50
83	C	O	C	O	C	C	O	C	O	C	C	C	C	C	496.50	375
84	C	O	O	C	C	C	O	C	O	C	C	C	C	C	490.50	376.50
85	C	O	C	C	C	C	O	C	O	C	C	C	C	C	484.50	390
86	C	O	O	O	O	O	C	C	O	C	C	C	C	C	478.50	415.50
87	C	O	C	O	O	O	C	C	O	C	C	C	C	C	472.50	453

* C = Closed or On; O = Open or Off

———— Continued ————

83325710 C

3-74

TABLE 3-14.   SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 1.6 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	O	O	O	C	O	O	C	C	O	C	C	C	C	C	468	372
89	O	O	C	C	O	O	C	C	O	C	C	C	C	C	462	432
90	C	C	C	C	O	O	C	C	O	C	C	C	C	C	457.50	370.50
91	O	C	O	O	C	O	C	C	O	C	C	C	C	C	453	318
92	O	C	C	O	C	O	C	C	O	C	C	C	C	C	447	411
93	C	O	O	C	C	O	C	C	O	C	C	C	C	C	442.50	378
94	O	O	C	C	C	O	C	C	O	C	C	C	C	C	438	354
95	C	C	C	C	C	O	C	C	O	C	C	C	C	C	433.50	339
96	O	C	O	O	O	C	C	C	O	C	C	C	C	C	429	333
97	C	O	C	O	O	C	C	C	O	C	C	C	C	C	424.50	336
98	O	O	O	C	O	C	C	C	O	C	C	C	C	C	420	348
99	C	C	O	C	O	C	C	C	O	C	C	C	C	C	415.50	369
100	O	C	C	C	O	C	C	C	O	C	C	C	C	C	411	399
101	O	O	O	O	C	C	C	C	O	C	C	C	C	C	408	288
102	C	C	O	O	C	C	C	C	O	C	C	C	C	C	403.50	334.50
103	O	C	C	O	C	C	C	C	O	C	C	C	C	C	399	390
104	O	O	O	C	C	C	C	C	O	C	C	C	C	C	396	300
105	C	C	O	C	C	C	C	C	O	C	C	C	C	C	391.50	372
106	C	O	C	C	C	C	C	C	O	C	C	C	C	C	388.50	295.50
107	O	O	O	O	O	O	O	O	C	C	C	C	C	C	384	384
108	O	C	O	O	O	O	O	O	C	C	C	C	C	C	381	321
109	O	O	C	O	O	O	O	O	C	C	C	C	C	C	378	264
110	O	C	C	O	O	O	O	O	C	C	C	C	C	C	375	213
111	C	O	O	C	O	O	O	O	C	C	C	C	C	C	370.50	333
112	C	C	O	C	O	O	O	O	C	C	C	C	C	C	367.50	295.50
113	C	O	C	C	O	O	O	O	C	C	C	C	C	C	364.50	264
114	C	C	C	C	O	O	O	O	C	C	C	C	C	C	361.50	238.50
115	C	O	O	O	C	O	O	O	C	C	C	C	C	C	358.50	219
116	C	C	O	O	C	O	O	O	C	C	C	C	C	C	355.50	205.50
117	C	O	C	O	C	O	O	O	C	C	C	C	C	C	352.50	198
118	C	C	C	O	C	O	O	O	C	C	C	C	C	C	349.50	196.50
119	C	O	O	C	C	O	O	O	C	C	C	C	C	C	346.50	201
120	C	C	O	C	C	O	O	O	C	C	C	C	C	C	343.50	211.50
121	C	O	C	C	C	O	O	O	C	C	C	C	C	C	340.50	228
122	C	C	C	C	C	O	O	O	C	C	C	C	C	C	337.50	250.50
123	C	O	O	O	O	C	O	O	C	C	C	C	C	C	334.50	279
124	C	C	O	O	O	C	O	O	C	C	C	C	C	C	331.50	313.50
125	O	O	C	O	O	C	O	O	C	C	C	C	C	C	330	168
126	O	C	C	O	O	C	O	O	C	C	C	C	C	C	327	213
127	O	O	O	C	O	C	O	O	C	C	C	C	C	C	324	264
128	O	C	O	C	O	C	O	O	C	C	C	C	C	C	321	321

* C = Closed or On; O = Open or Off

TABLE 3-15.   SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 2.465 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	O	C	C	C	C	C	C	O	C	O	10272	0
5	C	C	C	O	O	C	C	C	C	C	C	C	C	O	8217	3
6	O	O	O	O	O	O	C	O	C	O	C	O	O	C	6848	0
7	C	C	O	O	C	O	O	O	C	O	O	C	O	C	5869	5
8	O	O	O	O	C	C	C	C	C	C	O	C	O	C	5136	0
9	C	C	O	C	O	C	O	O	O	C	C	C	O	C	4565	3
10	O	O	C	O	C	C	C	C	C	C	C	C	O	C	4108	8
11	C	O	O	C	O	C	C	O	C	O	O	O	C	C	3735	3
12	O	O	O	O	O	C	O	C	O	C	O	O	C	C	3424	0
13	O	O	O	C	O	C	O	C	C	C	O	O	C	C	3160	8
14	O	C	O	C	O	O	O	C	O	O	C	O	C	C	2934	12
15	C	O	C	C	O	O	C	O	C	O	C	O	C	C	2739	3
16	O	O	O	C	C	C	C	C	C	O	C	O	C	C	2568	0
17	O	O	O	O	C	O	O	C	O	C	C	C	C	C	2416	16
18	O	C	C	O	C	O	O	O	C	C	C	O	C	C	2282	12
19	O	C	C	C	O	O	O	C	C	C	C	O	C	C	2162	10
20	O	C	O	C	C	C	C	C	C	C	C	O	C	C	2054	8
21	O	O	C	C	C	O	C	O	O	O	O	C	C	C	1956	12
22	C	O	C	O	C	C	O	C	O	O	O	C	C	C	1867	14
23	O	C	C	O	O	O	O	O	C	O	O	C	C	C	1786	10
24	O	O	O	O	C	O	C	O	C	O	O	C	C	C	1712	0
25	C	O	C	O	C	O	O	C	C	O	O	C	C	C	1643	13
26	O	O	C	O	C	O	C	C	C	O	O	C	C	C	1580	8
27	C	C	C	C	O	O	O	O	O	C	O	C	C	C	1521	21
28	C	O	C	O	O	O	C	O	O	C	O	C	C	C	1467	12
29	O	O	O	C	C	C	C	O	O	C	O	C	C	C	1416	24
30	C	C	C	O	O	C	O	C	O	C	O	C	C	C	1369	18
31	C	C	O	O	C	O	C	C	O	C	O	C	C	C	1325	13
32	O	O	C	C	C	C	C	C	O	C	O	C	C	C	1284	0
33	C	C	O	O	O	C	O	O	C	C	O	C	C	C	1245	3
34	O	O	O	C	O	O	C	O	C	C	O	C	C	C	1208	16
35	C	C	O	C	O	C	C	O	C	C	O	C	C	C	1173	33
36	C	C	O	C	O	O	O	C	C	C	O	C	C	C	1141	12
37	O	C	O	C	O	C	O	C	C	C	O	C	C	C	1110	18
38	C	C	C	O	O	O	C	C	C	C	O	C	C	C	1081	10
39	C	C	O	O	O	C	C	C	C	C	O	C	C	C	1053	21
40	C	O	C	C	C	C	C	C	C	C	O	C	C	C	1027	8
41	O	C	C	O	C	O	O	O	O	O	C	C	C	C	1002	6
42	O	C	C	C	O	C	O	O	O	O	C	C	C	C	978	12
43	C	O	C	O	O	O	C	O	O	O	C	C	C	C	955	23
44	C	C	O	C	C	O	C	O	O	O	C	C	C	C	933	36
45	C	C	C	C	O	C	C	O	O	O	C	C	C	C	913	3

* C = Closed or On; O = Open or Off

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83325710 C

TABLE 3-15. SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 2.465 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}	Bytes in Usable Sectors	Bytes in Runt Sector
46	C	C	O	O	O	O	O	C	O	O	C	C	C	C	893	10
47	O	C	C	O	C	O	O	C	O	O	C	C	C	C	874	10
48	O	O	O	C	O	C	O	C	O	O	C	C	C	C	856	0
49	O	C	O	C	C	C	O	C	O	O	C	C	C	C	838	26
50	C	C	O	C	O	O	C	C	O	O	C	C	C	C	821	38
51	C	C	O	C	C	O	C	C	O	O	C	C	C	C	805	33
52	O	C	O	C	O	C	C	C	O	O	C	C	C	C	790	8
53	C	O	O	C	C	C	C	C	O	O	C	C	C	C	775	13
54	O	O	O	C	O	O	O	O	C	O	C	C	C	C	760	48
55	C	O	C	O	C	O	O	O	C	O	C	C	C	C	747	3
56	C	C	O	O	O	C	O	O	C	O	C	C	C	C	733	40
57	O	O	O	O	C	C	O	O	C	O	C	C	C	C	720	48
58	O	O	C	C	C	C	O	O	C	O	C	C	C	C	708	24
59	O	O	O	C	O	O	C	O	C	O	C	C	C	C	696	24
60	O	O	C	O	C	O	C	O	C	O	C	C	C	C	684	48
61	C	C	C	C	C	O	C	O	C	O	C	C	C	C	673	35
62	O	C	O	C	O	C	C	O	C	O	C	C	C	C	662	44
63	O	O	C	O	C	C	C	O	C	O	C	C	C	C	652	12
64	O	C	C	C	C	C	C	O	C	O	C	C	C	C	642	0
65	O	O	O	C	O	O	O	C	C	O	C	C	C	C	632	8
66	O	C	O	O	C	O	O	C	C	O	C	C	C	C	622	36
67	C	C	O	C	C	O	O	C	C	O	C	C	C	C	613	17
68	O	O	C	O	O	C	O	C	C	O	C	C	C	C	604	16
69	C	O	C	C	O	C	O	C	C	O	C	C	C	C	595	33
70	O	C	C	O	C	C	O	C	C	O	C	C	C	C	586	68
71	O	C	C	C	C	C	O	C	C	O	C	C	C	C	578	50
72	O	C	C	O	O	O	C	C	C	O	C	C	C	C	570	48
73	O	C	C	C	O	O	C	C	C	O	C	C	C	C	562	62
74	C	O	C	O	C	O	C	C	C	O	C	C	C	C	555	18
75	C	O	C	C	C	O	C	C	C	O	C	C	C	C	547	63
76	O	O	C	O	O	C	C	C	C	O	C	C	C	C	540	48
77	C	C	O	C	O	C	C	C	C	O	C	C	C	C	533	47
78	O	C	O	O	C	C	C	C	C	O	C	C	C	C	526	60
79	O	O	O	C	C	C	C	C	C	O	C	C	C	C	520	8
80	C	C	C	C	C	C	C	C	C	O	C	C	C	C	513	48
81	C	O	C	O	O	O	O	O	O	C	C	C	C	C	507	21
82	C	C	O	C	O	O	O	O	O	C	C	C	C	C	501	6
83	C	O	O	O	C	O	O	O	O	C	C	C	C	C	495	3
84	C	C	C	O	C	O	O	O	O	C	C	C	C	C	489	12
85	C	O	C	C	C	O	O	O	O	C	C	C	C	C	483	33
86	C	C	O	O	O	C	O	O	O	C	C	C	C	C	477	66
87	O	O	O	C	O	C	O	O	O	C	C	C	C	C	472	24

* C = Closed or On; O = Open or Off

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TABLE 3-15.   SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 2.465 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	O	C	C	C	O	C	O	O	O	C	C	C	C	C	466	80
89	C	C	O	O	C	C	O	O	O	C	C	C	C	C	461	59
90	O	O	O	C	C	C	O	O	O	C	C	C	C	C	456	48
91	C	O	C	C	C	C	O	O	O	C	C	C	C	C	451	47
92	O	C	O	O	O	O	C	O	O	C	C	C	C	C	446	56
93	C	C	C	O	O	O	C	O	O	C	C	C	C	C	441	75
94	C	C	O	C	O	O	C	O	O	C	C	C	C	C	437	10
95	O	O	O	O	C	O	C	O	O	C	C	C	C	C	432	48
96	O	O	C	O	C	O	C	O	O	C	C	C	C	C	428	0
97	C	O	O	C	C	O	C	O	O	C	C	C	C	C	423	57
98	C	O	C	C	C	O	C	O	O	C	C	C	C	C	419	26
99	C	O	O	O	O	C	C	O	O	C	C	C	C	C	415	3
100	O	C	C	O	O	C	C	O	O	C	C	C	C	C	410	88
101	O	C	O	C	O	C	C	O	O	C	C	C	C	C	406	82
102	O	C	C	C	O	C	C	O	O	C	C	C	C	C	402	84
103	O	C	O	O	C	C	C	O	O	C	C	C	C	C	398	94
104	C	O	C	O	C	C	C	O	O	C	C	C	C	C	395	8
105	C	O	O	C	C	C	C	O	O	C	C	C	C	C	391	33
106	C	O	C	C	C	C	C	O	O	C	C	C	C	C	387	66
107	O	O	O	O	O	O	O	C	O	C	C	C	C	C	384	0
108	O	O	C	O	O	O	O	C	O	C	C	C	C	C	380	48
109	O	O	O	C	O	O	O	C	O	C	C	C	C	C	376	104
110	C	C	O	C	O	O	O	C	O	C	C	C	C	C	373	58
111	O	C	C	C	O	O	O	C	O	C	C	C	C	C	370	18
112	O	C	O	O	C	O	O	C	O	C	C	C	C	C	366	96
113	C	O	C	O	C	O	O	C	O	C	C	C	C	C	363	69
114	O	O	O	C	C	O	O	C	O	C	C	C	C	C	360	48
115	C	C	O	C	C	O	O	C	O	C	C	C	C	C	357	33
116	O	C	C	C	C	O	O	C	O	C	C	C	C	C	354	24
117	C	O	O	O	O	C	O	C	O	C	C	C	C	C	351	21
118	O	O	C	O	O	C	O	C	O	C	C	C	C	C	348	24
119	C	C	C	O	O	C	O	C	O	C	C	C	C	C	345	33
120	O	C	O	C	O	C	O	C	O	C	C	C	C	C	342	48
121	C	O	C	C	O	C	O	C	O	C	C	C	C	C	339	69
122	O	O	O	O	C	C	O	C	O	C	C	C	C	C	336	96
123	O	C	O	O	C	C	O	C	O	C	C	C	C	C	334	6
124	C	O	C	O	C	C	O	C	O	C	C	C	C	C	331	44
125	O	O	O	C	C	C	O	C	O	C	C	C	C	C	328	88
126	O	C	O	C	C	C	O	C	O	C	C	C	C	C	326	12
127	C	O	C	C	C	C	O	C	O	C	C	C	C	C	323	67
128	C	C	C	C	C	C	O	C	O	C	C	C	C	C	321	0

* C = Closed or On; O = Open or Off

TABLE 3 16.   SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 2.465 MHz (BYTE) CLOCK AND ROUND-UP METHOD

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	O	C	C	C	C	C	C	O	C	O	10272	10272
5	O	C	C	O	O	C	C	C	C	C	C	C	C	O	8218	8216
6	O	O	O	O	O	O	C	O	C	O	C	O	O	C	6848	6848
7	O	C	O	O	C	O	O	O	C	O	O	C	O	C	5870	5868
8	O	O	O	O	C	C	C	C	C	C	O	C	O	C	5136	5136
9	O	C	O	C	O	C	O	O	O	C	C	C	O	C	4566	4560
10	C	C	O	O	C	C	C	C	C	C	C	C	O	C	4109	4107
11	O	O	O	C	O	C	C	O	C	O	O	O	C	C	3736	3728
12	O	O	O	O	O	C	O	C	O	C	O	O	C	C	3424	3424
13	C	C	C	O	O	C	O	C	C	C	O	O	C	C	3161	3156
14	C	O	O	C	O	O	O	C	O	O	C	O	C	C	2935	2933
15	O	O	C	C	O	O	C	O	C	O	C	O	C	C	2740	2728
16	O	O	O	C	C	C	C	C	C	O	C	O	C	C	2568	2568
17	C	C	C	C	O	O	O	C	O	C	C	O	C	C	2417	2416
18	C	O	C	O	C	O	O	O	C	C	C	O	C	C	2283	2277
19	C	O	C	C	O	O	O	C	C	C	C	O	C	C	2163	2154
20	C	O	O	C	C	C	C	C	C	C	C	O	C	C	2055	2043
21	C	C	O	C	C	O	C	O	O	O	O	C	C	C	1957	1948
22	O	O	C	O	C	C	O	C	O	O	O	C	C	C	1868	1860
23	C	O	C	O	O	O	O	O	C	O	O	C	C	C	1787	1774
24	O	O	O	O	C	O	C	O	C	O	O	C	C	C	1712	1712
25	O	O	C	O	C	O	O	C	C	O	O	C	C	C	1644	1632
26	C	C	O	O	C	O	C	C	C	O	O	C	C	C	1581	1563
27	O	C	C	C	O	O	O	O	O	C	O	C	C	C	1522	1516
28	O	O	C	O	O	O	C	O	O	C	O	C	C	C	1468	1452
29	C	C	C	O	C	C	C	O	O	C	O	C	C	C	1417	1412
30	O	C	C	O	O	C	O	C	O	C	O	C	C	C	1370	1358
31	O	C	O	O	C	O	C	C	O	C	O	C	C	C	1326	1308
32	O	O	C	C	C	C	C	C	O	C	O	C	C	C	1284	1284
33	O	C	O	O	O	C	O	O	C	C	O	C	C	C	1246	1216
34	C	C	C	O	O	O	C	O	C	C	O	C	C	C	1209	1191
35	O	C	O	C	O	C	C	O	C	C	O	C	C	C	1174	1172
36	O	C	O	C	O	O	O	C	C	C	O	C	C	C	1142	1118
37	C	O	O	C	O	C	O	C	C	C	O	C	C	C	1111	1092
38	O	C	C	O	O	O	C	C	C	C	O	C	C	C	1082	1054
39	O	C	O	O	O	C	C	C	C	C	O	C	C	C	1054	1036
40	O	O	C	C	C	C	C	C	C	C	O	C	C	C	1028	996
41	C	O	C	O	C	O	O	O	O	O	C	C	C	C	1003	968
42	C	O	C	C	O	C	O	O	O	O	C	C	C	C	979	949
43	O	O	C	O	O	O	C	O	O	O	C	C	C	C	956	936
44	O	C	O	C	C	O	C	O	O	O	C	C	C	C	934	926
45	O	C	C	C	O	C	C	O	O	O	C	C	C	C	914	872

* C = Closed or On; O = Open or Off

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	O	C	O	O	O	O	O	C	O	O	C	C	C	C	894	858
47	C	O	C	O	C	O	O	C	O	O	C	C	C	C	875	838
48	O	O	O	C	O	C	O	C	O	O	C	C	C	C	856	856
49	C	O	O	C	C	C	O	C	O	O	C	C	C	C	839	816
50	O	C	O	C	O	O	C	C	O	O	C	C	C	C	822	810
51	O	C	O	C	C	O	C	C	O	O	C	C	C	C	806	788
52	C	O	O	C	O	C	C	C	O	O	C	C	C	C	791	747
53	O	O	O	C	C	C	C	C	O	O	C	C	C	C	776	736
54	C	C	C	O	O	O	O	O	C	O	C	C	C	C	761	755
55	O	O	C	O	C	O	O	O	C	O	C	C	C	C	748	696
56	O	C	O	O	O	C	O	O	C	O	C	C	C	C	734	718
57	C	C	C	C	O	C	O	O	C	O	C	C	C	C	721	712
58	C	C	O	C	C	C	O	O	C	O	C	C	C	C	709	675
59	C	C	C	O	O	O	C	O	C	O	C	C	C	C	697	662
60	C	C	O	O	C	O	C	O	C	O	C	C	C	C	685	673
61	O	C	C	C	C	O	C	O	C	O	C	C	C	C	674	648
62	C	O	O	C	O	C	C	O	C	O	C	C	C	C	663	645
63	C	C	O	O	C	C	C	O	C	O	C	C	C	C	653	602
64	O	C	C	C	C	C	C	O	C	O	C	C	C	C	642	642
65	C	C	C	O	O	O	O	C	C	O	C	C	C	C	633	576
66	C	O	O	O	C	O	O	C	C	O	C	C	C	C	623	593
67	O	C	O	C	C	O	O	C	C	O	C	C	C	C	614	564
68	C	C	O	O	O	C	O	C	C	O	C	C	C	C	605	553
69	O	O	C	C	O	C	O	C	C	O	C	C	C	C	596	560
70	C	O	C	O	C	C	O	C	C	O	C	C	C	C	587	585
71	C	O	C	C	C	C	O	C	C	O	C	C	C	C	579	558
72	C	O	C	O	O	O	C	C	C	O	C	C	C	C	571	547
73	C	O	C	C	O	O	C	C	C	O	C	C	C	C	563	552
74	O	O	C	O	C	O	C	C	C	O	C	C	C	C	556	500
75	O	O	C	C	C	O	C	C	C	O	C	C	C	C	548	536
76	C	C	O	O	O	C	C	C	C	O	C	C	C	C	541	513
77	O	C	O	C	O	C	C	C	C	O	C	C	C	C	534	504
78	C	O	O	O	C	C	C	C	C	O	C	C	C	C	527	509
79	C	C	C	O	C	C	C	C	C	O	C	C	C	C	521	450
80	O	C	C	C	C	C	C	C	C	O	C	C	C	C	514	482
81	O	O	C	O	O	O	O	O	O	C	C	C	C	C	508	448
82	O	C	O	C	O	O	O	O	O	C	C	C	C	C	502	426
83	O	O	O	O	C	O	O	O	O	C	C	C	C	C	496	416
84	O	C	C	O	C	O	O	O	O	C	C	C	C	C	490	418
85	O	O	C	C	C	O	O	O	O	C	C	C	C	C	484	432
86	O	C	O	O	O	C	O	O	O	C	C	C	C	C	478	458
87	C	C	C	O	O	C	O	O	O	C	C	C	C	C	473	410

* C = Closed or On; O = Open or Off

Continued

TABLE 3-16.   SECTOR SELECT SWITCH SETTINGS -- 850 MB DRIVES
USING 2.465 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	O	C	C	O	C	O	O	O	C	C	C	C	C	467	459
89	O	C	O	O	C	C	O	O	O	C	C	C	C	C	462	432
90	C	C	C	O	C	C	O	O	O	C	C	C	C	C	457	415
91	O	O	C	C	C	C	O	O	O	C	C	C	C	C	452	408
92	C	O	O	O	O	O	C	O	O	C	C	C	C	C	447	411
93	O	C	C	O	O	O	C	O	O	C	C	C	C	C	442	424
94	O	C	O	C	O	O	C	O	O	C	C	C	C	C	438	354
95	C	C	C	C	O	O	C	O	O	C	C	C	C	C	433	386
96	O	O	C	O	C	O	C	O	O	C	C	C	C	C	428	428
97	O	O	O	C	C	O	C	O	O	C	C	C	C	C	424	384
98	O	O	C	C	C	O	C	O	O	C	C	C	C	C	420	348
99	O	O	O	O	O	C	C	O	O	C	C	C	C	C	416	320
100	C	O	C	O	O	C	C	O	O	C	C	C	C	C	411	399
101	C	O	O	C	O	C	C	O	O	C	C	C	C	C	407	388
102	C	O	C	C	O	C	C	O	O	C	C	C	C	C	403	385
103	C	O	O	O	C	C	C	O	O	C	C	C	C	C	399	390
104	O	O	C	O	C	C	C	O	O	C	C	C	C	C	396	300
105	O	O	O	C	C	C	C	O	O	C	C	C	C	C	392	320
106	O	O	C	C	C	C	C	O	O	C	C	C	C	C	388	348
107	O	O	O	O	O	O	O	C	O	C	C	C	C	C	384	384
108	C	C	O	O	O	O	O	C	O	C	C	C	C	C	381	321
109	C	C	C	O	O	O	O	C	O	C	C	C	C	C	377	372
110	O	C	O	C	O	O	O	C	O	C	C	C	C	C	374	322
111	C	O	C	C	O	O	O	C	O	C	C	C	C	C	371	278
112	C	O	O	O	C	O	O	C	O	C	C	C	C	C	367	351
113	O	O	C	O	C	O	O	C	O	C	C	C	C	C	364	320
114	C	C	C	O	C	O	O	C	O	C	C	C	C	C	361	295
115	O	C	O	C	C	O	O	C	O	C	C	C	C	C	358	276
116	C	O	C	C	C	O	O	C	O	C	C	C	C	C	355	263
117	O	O	O	O	O	C	O	C	O	C	C	C	C	C	352	256
118	C	C	O	O	O	C	O	C	O	C	C	C	C	C	349	255
119	O	C	C	O	O	C	O	C	O	C	C	C	C	C	346	260
120	C	O	O	C	O	C	O	C	O	C	C	C	C	C	343	271
121	O	O	C	C	O	C	O	C	O	C	C	C	C	C	340	288
122	C	C	C	C	O	C	O	C	O	C	C	C	C	C	337	311
123	C	O	O	O	C	C	O	C	O	C	C	C	C	C	335	218
124	O	O	C	O	C	C	O	C	O	C	C	C	C	C	332	252
125	C	C	C	O	C	C	O	C	O	C	C	C	C	C	329	292
126	C	O	O	C	C	C	O	C	O	C	C	C	C	C	327	213
127	O	O	C	C	C	C	O	C	O	C	C	C	C	C	324	264
128	C	C	C	C	C	C	O	C	O	C	C	C	C	C	321	321

* C = Closed or On; O = Open or Off

TABLE 3-17. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 1.83 MHz CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	C	C	O	O	O	C	O	O	O	C	11448	0
5	C	C	C	O	O	C	O	O	O	O	O	C	O	C	9157.50	4.50
6	O	O	O	O	O	C	O	O	O	O	C	C	O	C	7632	0
7	C	C	C	O	C	C	C	C	O	C	C	C	O	C	6541.50	1.50
8	O	O	O	O	C	C	O	O	C	O	O	O	C	C	5724	0
9	O	O	O	O	O	O	C	C	O	C	O	O	C	C	5088	0
10	O	O	C	O	C	O	O	O	O	O	C	O	C	C	4578	12
11	C	O	O	C	O	C	O	O	C	O	C	O	C	C	4162.50	4.50
12	O	O	O	O	C	O	O	O	O	C	C	O	C	C	3816	0
13	O	O	C	O	C	O	C	C	O	C	C	O	C	C	3522	6
14	O	O	C	C	C	C	C	O	C	C	C	O	C	C	3270	12
15	C	O	C	C	O	O	O	O	O	O	O	C	C	C	3052.50	4.50
16	O	O	C	C	O	O	O	C	O	O	O	C	C	C	2862	0
17	C	O	C	C	C	C	C	C	O	O	O	C	C	C	2692.50	19.50
18	O	O	O	O	O	C	C	O	C	O	O	C	C	C	2544	0
19	O	C	O	C	C	C	O	C	C	O	O	C	C	C	2409	21
20	O	C	O	C	O	O	O	O	O	C	O	C	C	C	2289	12
21	C	C	O	O	C	O	C	O	O	C	O	C	C	C	2179.50	22.50
22	C	O	C	O	C	O	O	C	O	C	O	C	C	C	2080.50	21
23	C	O	O	O	C	O	C	C	O	C	O	C	C	C	1990.50	10.50
24	O	O	O	C	O	O	O	O	C	C	O	C	C	C	1908	0
25	C	C	O	C	C	C	O	O	C	C	O	C	C	C	1831.50	4.50
26	O	C	O	C	O	C	C	O	C	C	O	C	C	C	1761	6
27	O	C	C	O	C	O	O	C	C	C	O	C	C	C	1695	27
28	O	C	C	C	C	C	O	C	C	C	O	C	C	C	1635	12
29	O	O	C	O	O	C	C	C	C	C	O	C	C	C	1578	30
30	C	C	C	O	O	O	O	O	O	O	C	C	C	C	1525.50	27
31	O	O	O	C	O	C	O	O	O	O	C	C	C	C	1476	36
32	O	C	C	O	O	O	C	O	O	O	C	C	C	C	1431	0
33	C	C	O	O	O	C	C	O	O	O	C	C	C	C	1387.50	4.50
34	C	C	C	C	C	C	C	O	O	O	C	C	C	C	1345.50	45
35	O	O	O	C	C	O	O	C	O	O	C	C	C	C	1308	12
36	O	O	O	O	C	C	O	C	O	O	C	C	C	C	1272	0
37	C	C	C	O	O	O	C	C	O	O	C	C	C	C	1237.50	4.50
38	C	O	C	C	C	O	C	C	O	O	C	C	C	C	1204.50	21
39	O	C	O	O	C	C	C	C	O	O	C	C	C	C	1173	45
40	C	O	C	O	O	O	O	O	C	O	C	C	C	C	1144.50	12
41	O	O	O	C	C	O	O	O	C	O	C	C	C	C	1116	36
42	O	C	O	C	O	C	O	O	C	O	C	C	C	C	1089	54
43	C	C	O	C	C	C	O	O	C	O	C	C	C	C	1063.50	61.50
44	C	C	O	C	O	O	C	O	C	O	C	C	C	C	1039.50	54
45	O	C	O	C	C	O	C	O	C	O	C	C	C	C	1017	27

* C = Closed or On; O = Open or Off

Continued

83325710 C

TABLE 3-17.   SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 1.83 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	C	O	O	C	O	C	C	O	C	O	C	C	C	C	994.50	45
47	C	C	C	O	C	C	C	O	C	O	C	C	C	C	973.50	37.50
48	O	O	C	O	O	O	O	C	C	O	C	C	C	C	954	0
49	C	O	O	O	C	O	O	C	C	O	C	C	C	C	934.50	1.50
50	O	C	C	C	C	O	O	C	C	O	C	C	C	C	915	42
51	O	C	O	C	O	C	O	C	C	O	C	C	C	C	897	45
52	C	O	C	O	C	C	O	C	C	O	C	C	C	C	880.50	6
53	O	O	O	O	O	O	C	C	C	O	C	C	C	C	864	0
54	C	C	O	C	O	O	C	C	C	O	C	C	C	C	847.50	27
55	C	O	C	O	C	O	C	C	C	O	C	C	C	C	832.50	4.50
56	C	C	C	C	C	O	C	C	C	O	C	C	C	C	817.50	12
57	C	O	O	C	O	C	C	C	C	O	C	C	C	C	802.50	49.50
58	O	C	O	O	C	C	C	C	C	O	C	C	C	C	789	30
59	C	C	O	C	C	C	C	C	C	O	C	C	C	C	775.50	37.50
60	O	O	C	O	O	O	O	O	O	C	C	C	C	C	762	72
61	O	O	C	C	O	O	O	O	O	C	C	C	C	C	750	42
62	O	O	C	O	C	O	O	O	O	C	C	C	C	C	738	36
63	O	O	C	C	C	O	O	O	O	C	C	C	C	C	726	54
64	C	C	O	O	O	C	O	O	O	C	C	C	C	C	715.50	0
65	C	C	O	C	O	C	O	O	O	C	C	C	C	C	703.50	64.50
66	O	C	O	O	C	C	O	O	O	C	C	C	C	C	693	54
67	C	O	O	C	C	C	O	O	O	C	C	C	C	C	682.50	64.50
68	O	O	O	O	O	O	C	O	O	C	C	C	C	C	672	96
69	O	C	C	O	O	O	C	O	O	C	C	C	C	C	663	45
70	O	O	C	C	O	O	C	O	O	C	C	C	C	C	654	12
71	C	C	O	O	C	O	C	O	O	C	C	C	C	C	643.50	103.50
72	O	O	O	C	C	O	C	O	O	C	C	C	C	C	636	0
73	O	C	C	C	C	O	C	O	O	C	C	C	C	C	627	21
74	O	O	C	O	O	C	C	O	O	C	C	C	C	C	618	60
75	C	O	O	C	O	C	C	O	O	C	C	C	C	C	610.50	4.50
76	C	C	C	C	O	C	C	O	O	C	C	C	C	C	601.50	78
77	O	O	C	O	C	C	C	O	O	C	C	C	C	C	594	54
78	C	O	O	C	C	C	C	O	O	C	C	C	C	C	586.50	45
79	O	C	C	C	C	C	C	O	O	C	C	C	C	C	579	51
80	C	C	O	O	O	O	O	C	O	C	C	C	C	C	571.50	72
81	O	O	O	C	O	O	O	C	O	C	C	C	C	C	564	108
82	O	O	C	C	O	O	O	C	O	C	C	C	C	C	558	36
83	C	O	O	O	C	O	O	C	O	C	C	C	C	C	550.50	100.50
84	C	O	C	O	C	O	O	C	O	C	C	C	C	C	544.50	54
85	C	O	O	C	C	O	O	C	O	C	C	C	C	C	538.50	19.50
86	O	C	C	C	C	O	O	C	O	C	C	C	C	C	531	126
87	O	C	O	O	O	C	O	C	O	C	C	C	C	C	525	117

* C = Closed or On; O = Open or Off

———— Continued ————

83325710 C

3-83 •

TABLE 3-17. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 1.83 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	O	C	C	O	O	C	O	C	O	C	C	C	C	C	519	120
89	C	O	O	C	O	C	O	C	O	C	C	C	C	C	514.50	1.50
90	C	O	C	C	O	C	O	C	O	C	C	C	C	C	508.50	27
91	C	O	O	O	C	C	O	C	O	C	C	C	C	C	502.50	64.50
92	C	O	C	O	C	C	O	C	O	C	C	C	C	C	496.50	114
93	O	O	O	C	C	C	O	C	O	C	C	C	C	C	492	36
94	O	O	C	C	C	C	O	C	O	C	C	C	C	C	486	108
95	C	C	C	C	C	C	O	C	O	C	C	C	C	C	481.50	49.50
96	O	C	O	O	O	O	C	C	O	C	C	C	C	C	477	0
97	O	C	C	O	O	O	C	C	O	C	C	C	C	C	471	105
98	C	O	O	C	O	O	C	C	O	C	C	C	C	C	466.50	75
99	O	O	C	C	O	O	C	C	O	C	C	C	C	C	462	54
100	C	C	C	C	O	O	C	C	O	C	C	C	C	C	457.50	42
101	O	C	O	O	C	O	C	C	O	C	C	C	C	C	453	39
102	C	O	C	O	C	O	C	C	O	C	C	C	C	C	448.50	45
103	O	O	O	C	C	O	C	C	O	C	C	C	C	C	444	60
104	C	C	O	C	C	O	C	C	O	C	C	C	C	C	439.50	84
105	O	C	C	C	C	O	C	C	O	C	C	C	C	C	435	117
106	O	O	O	O	O	C	C	C	O	C	C	C	C	C	432	0
107	C	C	O	O	O	C	C	C	O	C	C	C	C	C	427.50	49.50
108	O	C	C	O	O	C	C	C	O	C	C	C	C	C	423	108
109	O	O	O	C	O	C	C	C	O	C	C	C	C	C	420	12
110	C	C	O	C	O	C	C	C	O	C	C	C	C	C	415.50	87
111	C	O	C	C	O	C	C	C	O	C	C	C	C	C	412.50	4.50
112	O	O	O	O	C	C	C	C	O	C	C	C	C	C	408	96
113	O	C	O	O	C	C	C	C	O	C	C	C	C	C	405	27
114	C	O	C	O	C	C	C	C	O	C	C	C	C	C	400.50	135
115	C	C	C	O	C	C	C	C	O	C	C	C	C	C	397.50	79.50
116	C	O	O	C	C	C	C	C	O	C	C	C	C	C	394.50	30
117	O	O	C	C	C	C	C	C	O	C	C	C	C	C	390	162
118	O	C	C	C	C	C	C	C	O	C	C	C	C	C	387	126
119	O	O	O	O	O	O	O	O	C	C	C	C	C	C	384	96
120	O	C	O	O	O	O	O	O	C	C	C	C	C	C	381	72
121	O	O	C	O	O	O	O	O	C	C	C	C	C	C	378	54
122	O	C	C	O	O	O	O	O	C	C	C	C	C	C	375	42
123	O	O	O	C	O	O	O	O	C	C	C	C	C	C	372	36
124	O	C	O	C	O	O	O	O	C	C	C	C	C	C	369	36
125	O	O	C	C	O	O	O	O	C	C	C	C	C	C	366	42
126	O	C	C	C	O	O	O	O	C	C	C	C	C	C	363	54
127	O	O	O	O	C	O	O	O	C	C	C	C	C	C	360	72
128	O	C	O	O	C	O	O	O	C	C	C	C	C	C	357	96
129	O	O	C	O	C	O	O	O	C	C	C	C	C	C	354	126

* C = Closed or On; O = Open or Off

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83325710 C

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
130	O	C	C	O	C	O	O	O	C	C	C	C	C	C	351	162
131	C	C	C	O	C	O	O	O	C	C	C	C	C	C	349.50	7.50
132	C	O	O	C	C	O	O	O	C	C	C	C	C	C	346.50	54
133	C	C	O	C	C	O	O	O	C	C	C	C	C	C	343.50	106.50
134	C	O	C	C	C	O	O	O	C	C	C	C	C	C	340.50	165
135	O	C	C	C	C	O	O	O	C	C	C	C	C	C	339	27
136	O	O	O	O	O	C	O	O	C	C	C	C	C	C	336	96
137	O	C	O	O	O	C	O	O	C	C	C	C	C	C	333	171
138	C	C	O	O	O	C	O	O	C	C	C	C	C	C	331.50	45
139	C	O	C	O	O	C	O	O	C	C	C	C	C	C	328.50	130.50
140	O	C	C	O	O	C	O	O	C	C	C	C	C	C	327	12
141	O	O	O	C	O	C	O	O	C	C	C	C	C	C	324	108
142	O	C	O	C	O	C	O	O	C	C	C	C	C	C	321	210
143	C	C	O	C	O	C	O	O	C	C	C	C	C	C	319.50	103.50
144	O	O	C	C	O	C	O	O	C	C	C	C	C	C	318	0
145	O	C	C	C	O	C	O	O	C	C	C	C	C	C	315	117
146	C	C	C	C	O	C	O	O	C	C	C	C	C	C	313.50	21
147	C	O	O	O	C	C	O	O	C	C	C	C	C	C	310.50	148.50
148	O	C	O	O	C	C	O	O	C	C	C	C	C	C	309	60
149	O	O	C	O	C	C	O	O	C	C	C	C	C	C	306	198
150	C	O	C	O	C	C	O	O	C	C	C	C	C	C	304.50	117
151	O	C	C	O	C	C	O	O	C	C	C	C	C	C	303	39
152	O	O	O	C	C	C	O	O	C	C	C	C	C	C	300	192
153	C	O	O	C	C	C	O	O	C	C	C	C	C	C	298.50	121.50
154	O	C	O	C	C	C	O	O	C	C	C	C	C	C	297	54
155	O	O	C	C	C	C	O	O	C	C	C	C	C	C	294	222
156	C	O	C	C	C	C	O	O	C	C	C	C	C	C	292.50	162
157	O	C	C	C	C	C	O	O	C	C	C	C	C	C	291	105
158	C	C	C	C	C	C	O	O	C	C	C	C	C	C	289.50	51
159	O	O	O	O	O	O	C	O	C	C	C	C	C	C	288	0
160	O	C	O	O	O	O	C	O	C	C	C	C	C	C	285	192
161	C	C	O	O	O	O	C	O	C	C	C	C	C	C	283.50	148.50
162	O	O	C	O	O	O	C	O	C	C	C	C	C	C	282	108
163	C	O	C	O	O	O	C	O	C	C	C	C	C	C	280.50	70.50
164	O	C	C	O	O	O	C	O	C	C	C	C	C	C	279	36
165	C	C	C	O	O	O	C	O	C	C	C	C	C	C	277.50	4.50
166	C	O	O	C	O	O	C	O	C	C	C	C	C	C	274.50	225
167	O	C	O	C	O	O	C	O	C	C	C	C	C	C	273	201
168	C	C	O	C	O	O	C	O	C	C	C	C	C	C	271.50	180

* C = Closed or On; O = Open or off

TABLE 3-18. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 1.83 MHz CLOCK AND ROUND-UP METHOD

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	C	C	O	O	O	C	O	O	O	C	11448	11448
5	O	C	C	O	O	C	O	O	O	O	O	C	O	C	9159	9156
6	O	O	O	O	O	C	O	O	O	O	C	C	O	C	7632	7632
7	O	C	C	O	C	C	C	C	O	C	C	C	O	C	6543	6534
8	O	O	O	C	C	O	O	O	C	O	O	O	C	C	5724	5724
9	O	O	O	O	O	O	C	C	O	C	O	O	C	C	5088	5088
10	C	C	O	O	C	O	O	O	O	O	C	O	C	C	4579.50	4576.50
11	O	O	O	C	O	C	O	O	C	O	C	O	C	C	4164	4152
12	O	O	O	O	C	O	O	O	O	C	C	O	C	C	3816	3816
13	C	C	O	O	C	O	C	C	O	C	C	O	C	C	3523.50	3510
14	C	C	O	C	C	C	C	O	C	C	C	O	C	C	3271.50	3262.50
15	O	O	C	C	O	O	O	O	O	O	O	C	C	C	3054	3036
16	O	O	C	C	O	O	O	C	O	O	O	C	C	C	2862	2862
17	O	O	C	C	C	C	C	C	O	O	O	C	C	C	2694	2688
18	O	O	O	O	O	C	C	O	C	O	O	C	C	C	2544	2544
19	C	O	O	C	C	C	O	C	C	O	O	C	C	C	2410.50	2403
20	C	O	O	C	O	O	O	O	O	C	O	C	C	C	2290.50	2272.50
21	O	C	O	O	C	O	C	O	O	C	O	C	C	C	2181	2172
22	O	O	C	O	C	O	O	C	O	C	O	C	C	C	2082	2070
23	O	O	O	O	C	O	C	C	O	C	O	C	C	C	1992	1968
24	O	O	O	C	O	O	O	O	C	C	O	C	C	C	1908	1908
25	O	C	O	C	C	C	O	O	C	C	O	C	C	C	1833	1800
26	C	O	O	C	O	C	C	O	C	C	O	C	C	C	1762.50	1729.50
27	C	O	C	O	C	O	O	C	C	C	O	C	C	C	1696.50	1683
28	C	O	C	C	C	C	O	C	C	C	O	C	C	C	1636.50	1606.50
29	C	C	O	O	O	C	C	C	C	C	O	C	C	C	1579.50	1566
30	O	C	C	O	O	O	O	O	O	O	C	C	C	C	1527	1509
31	C	C	C	O	O	C	O	O	O	O	C	C	C	C	1477.50	1467
32	O	C	C	O	O	O	C	O	O	O	C	C	C	C	1431	1431
33	O	C	O	O	O	C	C	O	O	O	C	C	C	C	1389	1344
34	O	C	C	C	C	C	C	O	O	O	C	C	C	C	1347	1341
35	C	C	C	O	C	O	O	C	O	O	C	C	C	C	1309.50	1269
36	O	O	O	O	C	C	O	C	O	O	C	C	C	C	1272	1272
37	O	C	C	O	O	O	C	C	O	O	C	C	C	C	1239	1188
38	O	O	C	C	C	O	C	C	O	O	C	C	C	C	1206	1170
39	C	O	O	O	C	C	C	C	O	O	C	C	C	C	1174.50	1161
40	O	O	C	O	O	O	O	O	C	O	C	C	C	C	1146	1098
41	C	C	C	O	C	O	O	O	C	O	C	C	C	C	1117.50	1092
42	C	O	O	C	O	C	O	O	C	O	C	C	C	C	1090.50	1081.50
43	O	C	O	C	C	C	O	O	C	O	C	C	C	C	1065	1062
44	O	C	O	C	O	O	C	O	C	O	C	C	C	C	1041	1029
45	C	O	O	C	C	O	C	O	C	O	C	C	C	C	1018.50	978

* C = Closed or On; O = Open or Off

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TABLE 3-18.   SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 1.83 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	O	O	O	C	O	C	C	O	C	O	C	C	C	C	996	972
47	O	C	C	O	C	C	C	O	C	O	C	C	C	C	975	942
48	O	O	C	O	O	O	O	C	C	O	C	C	C	C	954	954
49	O	O	O	O	C	O	O	C	C	O	C	C	C	C	936	864
50	C	O	C	C	C	O	O	C	C	O	C	C	C	C	916.50	883.50
51	C	O	O	C	O	C	O	C	C	O	C	C	C	C	898.50	867
52	O	O	C	O	C	C	O	C	C	O	C	C	C	C	882	810
53	O	O	O	O	O	O	C	C	C	O	C	C	C	C	864	864
54	O	C	O	C	O	O	C	C	C	O	C	C	C	C	849	795
55	O	O	C	O	C	O	C	C	C	O	C	C	C	C	834	756
56	O	C	C	C	C	O	C	C	C	O	C	C	C	C	819	747
57	O	O	O	C	O	C	C	C	C	O	C	C	C	C	804	768
58	C	O	O	O	C	C	C	C	C	O	C	C	C	C	790.50	733.50
59	O	C	O	C	C	C	C	C	C	O	C	C	C	C	777	726
60	C	C	O	O	O	O	O	O	O	C	C	C	C	C	763.50	745.50
61	C	C	O	C	O	O	O	O	O	C	C	C	C	C	751.50	702
62	C	C	O	O	C	O	O	O	O	C	C	C	C	C	739.50	682.50
63	C	C	O	C	C	O	O	O	O	C	C	C	C	C	727.50	687
64	C	C	O	O	O	C	O	O	O	C	C	C	C	C	715.50	715.50
65	O	C	O	C	O	C	O	O	O	C	C	C	C	C	705	672
66	C	O	O	O	C	C	O	O	O	C	C	C	C	C	694.50	649.50
67	O	O	O	C	C	C	O	O	O	C	C	C	C	C	684	648
68	C	C	C	C	C	C	O	O	O	C	C	C	C	C	673.50	667.50
69	C	O	C	O	O	O	C	O	O	C	C	C	C	C	664.50	606
70	C	C	O	C	O	O	C	O	O	C	C	C	C	C	655.50	562.50
71	O	C	O	O	C	O	C	O	O	C	C	C	C	C	645	642
72	O	O	O	C	C	O	C	O	O	C	C	C	C	C	636	636
73	C	O	C	C	C	O	C	O	O	C	C	C	C	C	628.50	540
74	C	C	O	O	O	C	C	O	O	C	C	C	C	C	619.50	568.50
75	O	O	O	C	O	C	C	O	O	C	C	C	C	C	612	504
76	O	C	C	C	O	C	C	O	O	C	C	C	C	C	603	567
77	C	C	O	O	C	C	C	O	O	C	C	C	C	C	595.50	534
78	O	O	O	C	C	C	C	O	O	C	C	C	C	C	588	516
79	C	O	C	C	C	C	C	O	O	C	C	C	C	C	580.50	513
80	O	C	O	O	O	O	O	C	O	C	C	C	C	C	573	525
81	C	C	C	O	O	O	O	C	O	C	C	C	C	C	565.50	552
82	C	C	O	C	O	O	O	C	O	C	C	C	C	C	559.50	472.50
83	O	O	O	O	C	O	O	C	O	C	C	C	C	C	552	528
84	O	O	C	O	C	O	O	C	O	C	C	C	C	C	546	474
85	O	O	O	C	C	O	O	C	O	C	C	C	C	C	540	432
86	C	O	C	C	C	O	O	C	O	C	C	C	C	C	532.50	529.50
87	C	O	O	O	O	C	O	C	O	C	C	C	C	C	526.50	513

* C = Closed or On; O = Open or Off

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TABLE 3-18. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 1.83 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	O	C	O	O	C	O	C	O	C	C	C	C	C	520.50	508.50
89	O	O	O	C	O	C	O	C	O	C	C	C	C	C	516	384
90	O	O	C	C	O	C	O	C	O	C	C	C	C	C	510	402
91	O	O	O	O	C	C	O	C	O	C	C	C	C	C	504	432
92	O	O	C	O	C	C	O	C	O	C	C	C	C	C	498	474
93	C	C	C	O	C	C	O	C	O	C	C	C	C	C	493.50	390
94	C	C	O	C	C	C	O	C	O	C	C	C	C	C	487.50	454.50
95	O	C	C	C	C	C	O	C	O	C	C	C	C	C	483	390
96	O	C	O	O	O	O	C	C	O	C	C	C	C	C	477	477
97	C	O	C	O	O	O	C	C	O	C	C	C	C	C	472.50	432
98	O	O	O	C	O	O	C	C	O	C	C	C	C	C	468	396
99	C	C	O	C	O	O	C	C	O	C	C	C	C	C	463.50	369
100	O	C	C	C	O	O	C	C	O	C	C	C	C	C	459	351
101	C	O	O	O	C	O	C	C	O	C	C	C	C	C	454.50	342
102	O	O	C	O	C	O	C	C	O	C	C	C	C	C	450	342
103	C	C	C	O	C	O	C	C	O	C	C	C	C	C	445.50	351
104	O	C	O	C	C	O	C	C	O	C	C	C	C	C	441	369
105	C	O	C	C	C	O	C	C	O	C	C	C	C	C	436.50	396
106	O	O	O	O	O	C	C	C	O	C	C	C	C	C	432	432
107	O	C	O	O	O	C	C	C	O	C	C	C	C	C	429	318
108	C	O	C	O	O	C	C	C	O	C	C	C	C	C	424.50	370.50
109	C	C	C	O	O	C	C	C	O	C	C	C	C	C	421.50	270
110	O	C	O	C	O	C	C	C	O	C	C	C	C	C	417	339
111	O	O	C	C	O	C	C	C	O	C	C	C	C	C	414	252
112	C	C	C	C	O	C	C	C	O	C	C	C	C	C	409.50	337.50
113	C	O	O	O	C	C	C	C	O	C	C	C	C	C	406.50	264
114	O	O	C	O	C	C	C	C	O	C	C	C	C	C	402	366
115	O	C	C	O	C	C	C	C	O	C	C	C	C	C	399	306
116	O	O	O	C	C	C	C	C	O	C	C	C	C	C	396	252
117	C	C	O	C	C	C	C	C	O	C	C	C	C	C	391.50	378
118	C	O	C	C	C	C	C	C	O	C	C	C	C	C	388.50	337.50
119	C	C	C	C	C	C	C	C	O	C	C	C	C	C	385.50	303
120	C	O	O	O	O	O	O	O	C	C	C	C	C	C	382.50	274.50
121	C	C	O	O	O	O	O	O	C	C	C	C	C	C	379.50	252
122	C	O	C	O	O	O	O	O	C	C	C	C	C	C	376.50	235.50
123	C	C	C	O	O	O	O	O	C	C	C	C	C	C	373.50	225
124	C	O	O	C	O	O	O	O	C	C	C	C	C	C	370.50	220.50
125	C	C	O	C	O	O	O	O	C	C	C	C	C	C	367.50	222
126	C	O	C	C	O	O	O	O	C	C	C	C	C	C	364.50	229.50
127	C	C	C	C	O	O	O	O	C	C	C	C	C	C	361.50	243
128	C	O	O	O	C	O	O	O	C	C	C	C	C	C	358.50	262.50
129	C	C	O	O	C	O	O	O	C	C	C	C	C	C	355.50	288

* C = Closed or On; O = Open or Off

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83325710 C

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
130	C	O	C	O	C	O	O	O	C	C	C	C	C	C	352.50	319.50
131	O	C	C	O	C	O	O	O	C	C	C	C	C	C	351	162
132	O	O	O	C	C	O	O	O	C	C	C	C	C	C	348	204
133	O	C	O	C	C	O	O	O	C	C	C	C	C	C	345	252
134	O	O	C	C	C	O	O	O	C	C	C	C	C	C	342	306
135	C	O	C	C	C	O	O	O	C	C	C	C	C	C	340.50	165
136	C	C	C	C	C	O	O	O	C	C	C	C	C	C	337.50	229.50
137	C	O	O	O	O	C	O	O	C	C	C	C	C	C	334.50	300
138	O	C	O	O	O	C	O	O	C	C	C	C	C	C	333	171
139	O	O	C	O	O	C	O	O	C	C	C	C	C	C	330	252
140	C	O	C	O	O	C	O	O	C	C	C	C	C	C	328.50	130.50
141	C	C	C	O	O	C	O	O	C	C	C	C	C	C	325.50	222
142	C	O	O	C	O	C	O	O	C	C	C	C	C	C	322.50	319.50
143	O	C	O	C	O	C	O	O	C	C	C	C	C	C	321	210
144	O	O	C	C	O	C	O	O	C	C	C	C	C	C	318	318
145	C	O	C	C	O	C	O	O	C	C	C	C	C	C	316.50	216
146	O	C	C	C	O	C	O	O	C	C	C	C	C	C	315	117
147	O	O	O	O	C	C	O	O	C	C	C	C	C	C	312	240
148	C	O	O	O	C	C	O	O	C	C	C	C	C	C	310.50	148.50
149	C	C	O	O	C	C	O	O	C	C	C	C	C	C	307.50	282
150	O	O	C	O	C	C	O	O	C	C	C	C	C	C	306	198
151	C	O	C	O	C	C	O	O	C	C	C	C	C	C	304.50	117
152	C	C	C	O	C	C	O	O	C	C	C	C	C	C	301.50	265.50
153	O	O	O	C	C	C	O	O	C	C	C	C	C	C	300	192
154	C	O	O	C	C	C	O	O	C	C	C	C	C	C	298.50	121.50
155	C	C	O	C	C	C	O	O	C	C	C	C	C	C	295.50	285
156	O	O	C	C	C	C	O	O	C	C	C	C	C	C	294	222
157	C	O	C	C	C	C	O	O	C	C	C	C	C	C	292.50	162
158	O	C	C	C	C	C	O	O	C	C	C	C	C	C	291	105
159	O	O	O	O	O	O	C	O	C	C	C	C	C	C	288	288
160	C	O	O	O	O	O	C	O	C	C	C	C	C	C	286.50	238.50
161	O	C	O	O	O	O	C	O	C	C	C	C	C	C	285	192
162	C	C	O	O	O	O	C	O	C	C	C	C	C	C	283.50	148.50
163	O	O	C	O	O	O	C	O	C	C	C	C	C	C	282	108
164	C	O	C	O	O	O	C	O	C	C	C	C	C	C	280.50	70.50
165	O	C	C	O	O	O	C	O	C	C	C.	C	C	C	279	36
166	O	O	O	C	O	O	C	O	C	C	C	C	C	C	276	252
167	C	O	O	C	O	O	C	O	C	C	C	C	C	C	274.50	225
168	O	C	O	C	O	O	C	O	C	C	C	C	C	C	273	201

* C = Closed or On; O = Open or Off

TABLE 3-19.   SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 2.75 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	C	O	O	C	O	C	C	O	O	C	O	11448	0
5	O	C	O	C	C	C	O	O	O	O	C	C	C	O	9158	2
6	O	O	O	O	C	C	O	O	O	C	O	O	O	C	7632	0
7	C	C	O	O	C	C	C	O	O	C	C	O	O	C	6541	5
8	O	O	C	O	O	C	O	C	C	O	O	C	O	C	5724	0
9	O	O	O	O	O	C	O	O	O	O	C	C	O	C	5088	0
10	C	O	C	C	C	O	O	O	O	C	C	C	O	C	4579	2
11	O	C	C	C	C	C	O	C	C	C	C	C	O	C	4162	10
12	O	O	O	C	C	O	O	O	C	O	O	O	C	C	3816	0
13	O	C	C	C	C	C	O	O	O	C	O	O	C	C	3522	6
14	O	C	O	C	C	C	O	O	C	C	O	O	C	C	3270	12
15	O	O	C	O	C	O	O	O	O	O	C	O	C	C	3052	12
16	O	C	O	O	C	O	C	C	O	O	C	O	C	C	2862	0
17	C	C	O	C	C	C	C	O	C	O	C	O	C	C	2693	11
18	O	O	O	O	C	O	O	O	O	C	C	O	C	C	2544	0
19	O	C	C	O	C	O	O	C	O	C	C	O	C	C	2410	2
20	C	C	C	C	O	O	O	O	C	C	C	O	C	C	2289	12
21	O	O	C	C	C	C	C	O	C	C	C	O	C	C	2180	12
22	C	C	C	C	C	O	C	C	C	C	C	O	C	C	2081	10
23	O	C	O	C	C	C	O	O	O	O	O	C	C	C	1990	22
24	O	O	C	C	O	O	O	C	O	O	O	C	C	C	1908	0
25	C	O	O	C	C	O	C	C	O	O	O	C	C	C	1831	17
26	C	C	C	C	C	O	O	O	C	O	O	C	C	C	1761	6
27	O	O	O	O	O	C	C	O	C	O	O	C	C	C	1696	0
28	C	O	C	C	C	O	O	C	C	O	O	C	C	C	1635	12
29	C	O	C	O	C	O	C	C	C	O	O	C	C	C	1579	1
30	O	C	O	C	O	O	O	O	O	C	O	C	C	C	1526	12
31	C	C	O	C	C	C	O	O	O	C	O	C	C	C	1477	5
32	C	O	O	C	O	C	C	O	O	C	O	C	C	C	1431	0
33	C	O	C	O	C	O	O	C	O	C	O	C	C	C	1387	21
34	O	C	C	C	C	C	O	C	O	C	O	C	C	C	1346	28
35	O	O	C	O	O	C	C	C	O	C	O	C	C	C	1308	12
36	O	O	O	C	O	O	O	O	C	C	O	C	C	C	1272	0
37	C	C	O	C	O	C	O	O	C	C	O	C	C	C	1237	23
38	C	C	O	C	O	O	C	O	C	C	O	C	C	C	1205	2
39	O	C	O	C	O	C	C	O	C	C	O	C	C	C	1174	6
40	O	O	O	C	O	O	O	C	C	C	O	C	C	C	1144	32
41	O	O	C	O	O	C	O	C	C	C	O	C	C	C	1116	36
42	O	C	C	C	C	C	O	C	C	C	O	C	C	C	1090	12
43	O	O	O	C	C	O	C	C	C	C	O	C	C	C	1064	40
44	O	O	O	O	C	C	C	C	C	C	O	C	C	C	1040	32
45	C	C	C	O	O	O	O	O	O	O	C	C	C	C	1017	27

* C = Closed or On; O = Open or Off

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83325710 C

TABLE 3-19. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 2.75 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	C	O	C	C	C	O	O	O	O	O	C	C	C	C	995	22
47	O	C	O	O	C	C	O	O	O	O	C	C	C	C	974	14
48	O	C	C	O	O	O	C	O	O	O	C	C	C	C	954	0
49	O	C	O	C	C	O	C	O	O	O	C	C	C	C	934	26
50	C	O	C	C	O	C	C	O	O	O	C	C	C	C	915	42
51	C	C	C	C	C	C	C	O	O	O	C	C	C	C	897	45
52	O	O	O	O	C	O	O	C	O	O	C	C	C	C	880	32
53	O	O	O	O	O	C	O	C	O	O	C	C	C	C	864	0
54	O	O	O	O	C	C	O	C	O	O	C	C	C	C	848	0
55	O	O	O	O	O	O	C	C	O	O	C	C	C	C	832	32
56	C	C	C	C	O	O	C	C	O	O	C	C	C	C	817	40
57	C	O	C	C	C	O	C	C	O	O	C	C	C	C	803	21
58	C	C	O	C	O	C	C	C	O	O	C	C	C	C	789	30
59	O	O	O	C	C	C	C	C	O	O	C	C	C	C	776	8
60	C	O	C	O	O	O	O	O	C	O	C	C	C	C	763	12
61	O	C	O	O	C	O	O	O	C	O	C	C	C	C	750	42
62	O	C	C	C	C	O	O	O	C	O	C	C	C	C	738	36
63	O	C	O	C	O	C	O	O	C	O	C	C	C	C	726	54
64	C	O	C	O	C	C	O	O	C	O	C	C	C	C	715	32
65	O	O	O	O	O	O	C	O	C	O	C	C	C	C	704	32
66	C	C	O	C	O	O	C	O	C	O	C	C	C	C	693	54
67	C	O	C	O	C	O	C	O	C	O	C	C	C	C	683	31
68	C	C	C	C	C	O	C	O	C	O	C	C	C	C	673	28
69	C	O	O	C	O	C	C	O	C	O	C	C	C	C	663	45
70	O	C	O	O	C	C	C	O	C	O	C	C	C	C	654	12
71	O	O	C	C	C	C	C	O	C	O	C	C	C	C	644	68
72	O	O	C	O	O	O	O	C	C	O	C	C	C	C	636	0
73	C	O	C	C	O	O	O	C	C	O	C	C	C	C	627	21
74	O	C	C	O	C	O	O	C	C	O	C	C	C	C	618	60
75	O	C	C	C	C	O	O	C	C	O	C	C	C	C	610	42
76	O	C	C	O	O	C	O	C	C	O	C	C	C	C	602	40
77	O	C	C	C	O	C	O	C	C	O	C	C	C	C	594	54
78	C	O	C	O	C	C	O	C	C	O	C	C	C	C	587	6
79	C	O	C	C	C	C	O	C	C	O	C	C	C	C	579	51
80	O	O	C	O	O	O	C	C	C	O	C	C	C	C	572	32
81	C	C	O	C	O	O	C	C	C	O	C	C	C	C	565	27
82	O	C	O	O	C	O	C	C	C	O	C	C	C	C	558	36
83	C	O	O	C	C	O	C	C	C	O	C	C	C	C	551	59
84	C	C	C	C	C	O	C	C	C	O	C	C	C	C	545	12
85	O	C	C	O	O	C	C	C	C	O	C	C	C	C	538	62
86	O	O	C	C	O	C	C	C	C	O	C	C	C	C	532	40
87	O	C	O	O	C	C	C	C	C	O	C	C	C	C	526	30

* C = Closed or On; O = Open or Off

Continued

83325710 C

3-91 •

TABLE 3-19.   SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 2.75 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	O	O	O	C	C	C	C	C	C	O	C	C	C	C	520	32
89	O	C	C	C	C	C	C	C	C	O	C	C	C	C	514	46
90	O	O	C	O	O	O	O	O	O	C	C	C	C	C	508	72
91	C	O	O	C	O	O	O	O	O	C	C	C	C	C	503	19
92	C	C	C	C	O	O	O	O	O	C	C	C	C	C	497	68
93	O	O	C	O	C	O	O	O	O	C	C	C	C	C	492	36
94	C	O	O	C	C	O	O	O	O	C	C	C	C	C	487	14
95	O	C	C	C	C	O	O	O	O	C	C	C	C	C	482	2
96	C	C	O	O	O	C	O	O	O	C	C	C	C	C	477	0
97	O	O	O	C	O	C	O	O	O	C	C	C	C	C	472	8
98	C	O	C	C	O	C	O	O	O	C	C	C	C	C	467	26
99	O	C	O	O	C	C	O	O	O	C	C	C	C	C	462	54
100	C	C	C	O	C	C	O	O	O	C	C	C	C	C	457	92
101	C	C	O	C	C	C	O	O	O	C	C	C	C	C	453	39
102	O	O	O	O	O	O	C	O	O	C	C	C	C	C	448	96
103	O	O	C	O	O	O	C	O	O	C	C	C	C	C	444	60
104	O	O	O	C	O	O	C	O	O	C	C	C	C	C	440	32
105	O	O	C	C	O	O	C	O	O	C	C	C	C	C	436	12
106	O	O	O	O	C	O	C	O	O	C	C	C	C	C	432	0
107	C	O	C	O	C	O	C	O	O	C	C	C	C	C	427	103
108	O	O	O	C	C	O	C	O	O	C	C	C	C	C	424	0
109	O	O	C	C	C	O	C	O	O	C	C	C	C	C	420	12
110	O	O	O	O	O	C	C	O	O	C	C	C	C	C	416	32
111	O	O	C	O	O	C	C	O	O	C	C	C	C	C	412	60
112	O	O	O	C	O	C	C	O	O	C	C	C	C	C	408	96
113	C	C	O	C	O	C	C	O	O	C	C	C	C	C	405	27
114	C	C	C	C	O	C	C	O	O	C	C	C	C	C	401	78
115	O	C	O	O	C	C	C	O	O	C	C	C	C	C	398	22
116	O	C	C	O	C	C	C	O	O	C	C	C	C	C	394	88
117	C	O	O	C	C	C	C	O	O	C	C	C	C	C	391	45
118	O	O	C	C	C	C	C	O	O	C	C	C	C	C	388	8
119	O	O	O	O	O	O	O	C	O	C	C	C	C	C	384	96
120	C	C	O	O	O	O	O	C	O	C	C	C	C	C	381	72
121	O	C	C	O	O	O	O	C	O	C	C	C	C	C	378	54
122	C	O	O	C	O	O	O	C	O	C	C	C	C	C	375	42
123	O	O	C	C	O	O	O	C	O	C	C	C	C	C	372	36
124	C	C	C	C	O	O	O	C	O	C	C	C	C	C	369	36
125	O	C	O	O	C	O	O	C	O	C	C	C	C	C	366	42
126	C	O	C	O	C	O	O	C	O	C	C	C	C	C	363	54
127	O	O	O	C	C	O	O	C	O	C	C	C	C	C	360	72
128	C	C	O	C	C	O	O	C	O	C	C	C	C	C	357	96
129	O	C	C	C	C	O	O	C	O	C	C	C	C	C	354	126

* C = Closed or On; O = Open or Off

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TABLE 3-19. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 2.75 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
130	O	O	O	O	O	C	O	C	O	C	C	C	C	C	352	32
131	C	C	O	O	O	C	O	C	O	C	C	C	C	C	349	73
132	O	C	C	O	O	C	O	C	O	C	C	C	C	C	346	120
133	O	O	O	C	O	C	O	C	O	C	C	C	C	C	344	40
134	C	C	O	C	O	C	O	C	O	C	C	C	C	C	341	98
135	C	O	C	C	O	C	O	C	O	C	C	C	C	C	339	27
136	O	O	O	O	C	C	O	C	O	C	C	C	C	C	336	96
137	O	C	O	O	C	C	O	C	O	C	C	C	C	C	334	34
138	C	O	C	O	C	C	O	C	O	C	C	C	C	C	331	114
139	C	C	C	O	C	C	O	C	O	C	C	C	C	C	329	61
140	C	O	O	C	C	C	O	C	O	C	C	C	C	C	327	12
141	O	O	C	C	C	C	O	C	O	C	C	C	C	C	324	108
142	O	C	C	C	C	C	O	C	O	C	C	C	C	C	322	68
143	O	O	O	O	O	O	C	C	O	C	C	C	C	C	320	32
144	O	C	O	O	O	O	C	C	O	C	C	C	C	C	318	0
145	C	O	C	O	O	O	C	C	O	C	C	C	C	C	315	117
146	C	C	C	O	O	O	C	C	O	C	C	C	C	C	313	94
147	C	O	O	C	O	O	C	C	O	C	C	C	C	C	311	75
148	C	C	O	C	O	O	C	C	O	C	C	C	C	C	309	60
149	C	O	C	C	O	O	C	C	O	C	C	C	C	C	307	49
150	C	C	C	C	O	O	C	C	O	C	C	C	C	C	305	42
151	C	O	O	O	C	O	C	C	O	C	C	C	C	C	303	39
152	C	C	O	O	C	O	C	C	O	C	C	C	C	C	301	40
153	C	O	C	O	C	O	C	C	O	C	C	C	C	C	299	45
154	C	C	C	O	C	O	C	C	O	C	C	C	C	C	297	54
155	C	O	O	C	C	O	C	C	O	C	C	C	C	C	295	67
156	C	C	O	C	C	O	C	C	O	C	C	C	C	C	293	84
157	C	O	C	C	C	O	C	C	O	C	C	C	C	C	291	105
158	C	C	C	C	C	O	C	C	O	C	C	C	C	C	289	130
159	O	O	O	O	O	C	C	C	O	C	C	C	C	C	288	0
160	O	C	O	O	O	C	C	C	O	C	C	C	C	C	286	32
161	O	O	C	O	O	C	C	C	O	C	C	C	C	C	284	68
162	O	C	C	O	O	C	C	C	O	C	C	C	C	C	282	108
163	O	O	O	C	O	C	C	C	O	C	C	C	C	C	280	152
164	C	O	O	C	O	C	C	C	O	C	C	C	C	C	279	36
165	C	C	O	C	O	C	C	C	O	C	C	C	C	C	277	87
166	C	O	C	C	O	C	C	C	O	C	C	C	C	C	275	142
167	O	C	C	C	O	C	C	C	O	C	C	C	C	C	274	34
168	O	O	O	O	C	C	C	C	O	C	C	C	C	C	272	96

* C = Closed or On; O = Open or Off

83325710 C

TABLE 3-20. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 2.75 MHz (BYTE) CLOCK AND ROUND-UP METHOD

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	C	O	O	C	O	C	C	O	O	C	O	11448	11448
5	C	O	O	C	C	C	O	O	O	O	C	C	C	O	9159	9156
6	O	O	O	O	C	C	O	O	O	C	O	O	O	C	7632	7632
7	O	C	O	O	C	C	C	O	O	C	C	O	O	C	6542	6540
8	O	O	C	O	O	C	O	C	C	O	O	C	O	C	5724	5724
9	O	O	O	O	O	C	O	O	O	O	C	C	O	C	5088	5088
10	O	O	C	C	C	O	O	O	O	C	C	C	O	C	4580	4572
11	C	O	C	C	C	C	O	C	C	C	C	C	O	C	4163	4162
12	O	O	O	C	C	O	O	O	C	O	O	O	C	C	3816	3816
13	C	O	C	C	C	C	O	O	O	C	O	O	C	C	3523	3516
14	C	O	O	C	C	C	O	O	C	C	O	O	C	C	3271	3269
15	C	C	O	O	C	O	O	O	O	O	C	O	C	C	3053	3050
16	O	C	O	O	C	O	C	C	O	O	C	O	C	C	2862	2862
17	O	C	O	C	C	C	C	O	C	O	C	O	C	C	2694	2688
18	O	O	O	O	C	O	O	O	O	C	C	O	C	C	2544	2544
19	C	O	C	O	C	O	O	C	O	C	C	O	C	C	2411	2394
20	O	C	C	C	O	O	O	O	C	C	C	O	C	C	2290	2282
21	C	C	O	C	C	C	C	O	C	C	C	O	C	C	2181	2172
22	O	C	C	C	C	O	C	C	C	C	C	O	C	C	2082	2070
23	C	O	O	C	C	C	O	O	O	O	O	C	C	C	1991	1990
24	O	O	C	C	O	O	O	C	O	O	O	C	C	C	1908	1908
25	O	O	O	C	C	O	C	C	O	O	O	C	C	C	1832	1824
26	O	C	C	C	C	O	O	O	C	O	O	C	C	C	1762	1742
27	O	O	O	O	O	C	C	O	C	O	O	C	C	C	1696	1696
28	O	O	C	C	C	O	O	C	C	O	O	C	C	C	1636	1620
29	O	O	C	O	C	O	C	C	C	O	O	C	C	C	1580	1552
30	C	O	O	C	O	O	O	O	O	C	O	C	C	C	1527	1509
31	O	C	O	C	C	C	O	O	O	C	O	C	C	C	1478	1452
32	C	O	O	C	O	C	C	O	O	C	O	C	C	C	1431	1431
33	O	O	C	O	C	O	O	C	O	C	O	C	C	C	1388	1376
34	C	O	C	C	C	C	O	C	O	C	O	C	C	C	1347	1341
35	C	C	O	O	O	C	C	C	O	C	O	C	C	C	1309	1286
36	O	O	O	C	O	O	O	O	C	C	O	C	C	C	1272	1272
37	O	C	O	C	O	C	O	O	C	C	O	C	C	C	1238	1224
38	O	C	O	C	O	O	C	O	C	C	O	C	C	C	1206	1170
39	C	O	O	C	O	C	C	O	C	C	O	C	C	C	1175	1142
40	C	C	C	O	O	O	O	C	C	C	O	C	C	C	1145	1137
41	C	C	O	O	O	C	O	C	C	C	O	C	C	C	1117	1112
42	C	O	C	C	C	C	O	C	C	C	O	C	C	C	1091	1061
43	C	C	C	O	C	O	C	C	C	C	O	C	C	C	1065	1062
44	C	C	C	C	O	C	C	C	C	C	O	C	C	C	1041	1029
45	O	C	C	O	O	O	O	O	O	O	C	C	C	C	1018	1000

* C = Closed or On; O = Open or Off

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83325710 C

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	O	O	C	C	C	O	O	O	O	O	C	C	C	C	996	972
47	C	O	O	O	C	C	O	O	O	O	C	C	C	C	975	942
48	O	C	C	O	O	O	C	O	O	O	C	C	C	C	954	954
49	C	O	O	C	C	O	C	O	O	O	C	C	C	C	935	912
50	O	O	C	C	O	C	C	O	O	O	C	C	C	C	916	908
51	O	C	C	C	C	C	C	O	O	O	C	C	C	C	898	892
52	C	C	C	C	O	O	O	C	O	O	C	C	C	C	881	861
53	O	O	O	O	O	C	O	C	O	O	C	C	C	C	864	864
54	O	O	O	O	C	C	O	C	O	O	C	C	C	C	848	848
55	C	C	C	C	C	C	O	C	O	O	C	C	C	C	833	810
56	O	C	C	C	O	O	C	C	O	O	C	C	C	C	818	802
57	O	O	C	C	C	O	C	C	O	O	C	C	C	C	804	768
58	O	C	O	C	O	C	C	C	O	O	C	C	C	C	790	762
59	C	C	C	O	C	C	C	C	O	O	C	C	C	C	777	726
60	O	O	C	O	O	O	O	O	C	O	C	C	C	C	764	716
61	C	O	O	O	C	O	O	O	C	O	C	C	C	C	751	732
62	C	O	C	C	C	O	O	O	C	O	C	C	C	C	739	713
63	C	O	O	C	O	C	O	O	C	O	C	C	C	C	727	718
64	O	O	C	O	C	C	O	O	C	O	C	C	C	C	716	684
65	C	C	C	C	C	C	O	O	C	O	C	C	C	C	705	672
66	O	C	O	C	O	O	C	O	C	O	C	C	C	C	694	682
67	O	O	C	O	C	O	C	O	C	O	C	C	C	C	684	648
68	O	C	C	C	C	O	C	O	C	O	C	C	C	C	674	634
69	O	O	O	C	O	C	C	O	C	O	C	C	C	C	664	640
70	C	O	O	O	C	C	C	O	C	O	C	C	C	C	655	597
71	C	C	O	C	C	C	C	O	C	O	C	C	C	C	645	642
72	O	O	C	O	O	O	O	C	C	O	C	C	C	C	636	636
73	O	O	C	C	O	O	O	C	C	O	C	C	C	C	628	576
74	C	O	C	O	C	O	O	C	C	O	C	C	C	C	619	605
75	C	O	C	C	C	O	O	C	C	O	C	C	C	C	611	578
76	C	O	C	O	O	C	O	C	C	O	C	C	C	C	603	567
77	C	O	C	C	O	C	O	C	C	O	C	C	C	C	595	572
78	O	O	C	O	C	C	O	C	C	O	C	C	C	C	588	516
79	O	O	C	C	C	C	O	C	C	O	C	C	C	C	580	552
80	C	C	O	O	O	O	C	C	C	O	C	C	C	C	573	525
81	O	C	O	C	O	O	C	C	C	O	C	C	C	C	566	512
82	C	O	O	O	C	O	C	C	C	O	C	C	C	C	559	513
83	O	O	O	C	C	O	C	C	C	O	C	C	C	C	552	528
84	O	C	C	C	C	O	C	C	C	O	C	C	C	C	546	474
85	C	O	C	O	O	C	C	C	C	O	C	C	C	C	539	516
86	C	C	O	C	O	C	C	C	C	O	C	C	C	C	533	487
87	C	O	O	O	C	C	C	C	C	O	C	C	C	C	527	470

* C = Closed or On; O = Open or off

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TABLE 3-20.   SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 2.75 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	C	C	O	C	C	C	C	C	O	C	C	C	C	521	465
89	C	O	C	C	C	C	C	C	C	O	C	C	C	C	515	472
90	C	C	O	O	O	O	O	O	O	C	C	C	C	C	509	491
91	O	O	O	C	O	O	O	O	O	C	C	C	C	C	504	432
92	O	C	C	C	O	O	O	O	O	C	C	C	C	C	498	474
93	C	C	O	O	C	O	O	O	O	C	C	C	C	C	493	436
94	O	O	O	C	C	O	O	O	O	C	C	C	C	C	488	408
95	C	O	C	C	C	O	O	O	O	C	C	C	C	C	483	390
96	C	C	O	O	O	C	O	O	O	C	C	C	C	C	477	477
97	C	C	C	O	O	C	O	O	O	C	C	C	C	C	473	384
98	O	O	C	C	O	C	O	O	O	C	C	C	C	C	468	396
99	C	O	O	O	C	C	O	O	O	C	C	C	C	C	463	418
100	O	C	C	O	C	C	O	O	O	C	C	C	C	C	458	450
101	O	C	O	C	C	C	O	O	O	C	C	C	C	C	454	392
102	C	C	C	C	C	C	O	O	O	C	C	C	C	C	449	443
103	C	C	O	O	O	O	C	O	O	C	C	C	C	C	445	402
104	C	C	C	O	O	O	C	O	O	C	C	C	C	C	441	369
105	C	C	O	C	O	O	C	O	O	C	C	C	C	C	437	344
106	O	O	O	O	C	O	C	O	O	C	C	C	C	C	432	432
107	O	O	C	O	C	O	C	O	O	C	C	C	C	C	428	424
108	O	O	O	C	C	O	C	O	O	C	C	C	C	C	424	424
109	C	C	O	C	C	O	C	O	O	C	C	C	C	C	421	324
110	C	C	C	C	C	O	C	O	O	C	C	C	C	C	417	339
111	C	C	O	O	O	C	C	O	O	C	C	C	C	C	413	362
112	C	C	C	O	O	C	C	O	O	C	C	C	C	C	409	393
113	O	C	O	C	O	C	C	O	O	C	C	C	C	C	406	320
114	O	C	C	C	O	C	C	O	O	C	C	C	C	C	402	366
115	C	O	O	O	C	C	C	O	O	C	C	C	C	C	399	306
116	C	O	C	O	C	C	C	O	O	C	C	C	C	C	395	367
117	O	O	O	C	C	C	C	O	O	C	C	C	C	C	392	320
118	C	C	O	C	C	C	C	O	O	C	C	C	C	C	389	279
119	C	C	C	C	C	C	C	O	O	C	C	C	C	C	385	362
120	O	C	O	O	O	O	O	C	O	C	C	C	C	C	382	334
121	C	O	C	O	O	O	O	C	O	C	C	C	C	C	379	312
122	O	O	O	C	O	O	O	C	O	C	C	C	C	C	376	296
123	C	C	C	C	O	O	O	C	O	C	C	C	C	C	373	286
124	O	C	C	C	O	O	O	C	O	C	C	C	C	C	370	282
125	C	O	O	O	C	O	O	C	O	C	C	C	C	C	367	284
126	O	O	C	O	C	O	O	C	O	C	C	C	C	C	364	292
127	C	C	C	O	C	O	O	C	O	C	C	C	C	C	361	306
128	O	C	O	C	C	O	O	C	O	C	C	C	C	C	358	326
129	C	O	C	C	C	O	O	C	O	C	C	C	C	C	355	352

* C = Closed or On; O = Open or Off

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83325710 C

TABLE 3-20. SECTOR SELECT SWITCH SETTINGS -- 1120 MB DRIVES
USING 2.75 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}	Bytes in Early Sectors	Bytes in Last Sector
130	C	C	C	C	C	O	O	C	O	C	C	C	C	C	353	255
131	O	C	O	O	O	C	O	C	O	C	C	C	C	C	350	292
132	C	O	C	O	O	C	O	C	O	C	C	C	C	C	347	335
133	C	C	C	O	O	C	O	C	O	C	C	C	C	C	345	252
134	O	C	O	C	O	C	O	C	O	C	C	C	C	C	342	306
135	O	O	C	C	O	C	O	C	O	C	C	C	C	C	340	232
136	C	C	C	C	O	C	O	C	O	C	C	C	C	C	337	297
137	C	O	O	O	C	C	O	C	O	C	C	C	C	C	335	232
138	O	O	C	O	C	C	O	C	O	C	C	C	C	C	332	308
139	O	C	C	O	C	C	O	C	O	C	C	C	C	C	330	252
140	O	O	O	C	C	C	O	C	O	C	C	C	C	C	328	200
141	C	C	O	C	C	C	O	C	O	C	C	C	C	C	325	292
142	C	O	C	C	C	C	O	C	O	C	C	C	C	C	323	249
143	C	C	C	C	C	C	O	C	O	C	C	C	C	C	321	210
144	O	C	O	O	O	O	C	C	O	C	C	C	C	C	318	318
145	O	O	C	O	O	O	C	C	O	C	C	C	C	C	316	288
146	O	C	C	O	O	O	C	C	O	C	C	C	C	C	314	262
147	O	O	O	C	O	O	C	C	O	C	C	C	C	C	312	240
148	O	C	O	C	O	O	C	C	O	C	C	C	C	C	310	222
149	O	O	C	C	O	O	C	C	O	C	C	C	C	C	308	208
150	O	C	C	C	O	O	C	C	O	C	C	C	C	C	306	198
151	O	O	O	O	C	O	C	C	O	C	C	C	C	C	304	192
152	O	C	O	O	C	O	C	C	O	C	C	C	C	C	302	190
153	O	O	C	O	C	O	C	C	O	C	C	C	C	C	300	192
154	O	C	C	O	C	O	C	C	O	C	C	C	C	C	298	198
155	O	O	O	C	C	O	C	C	O	C	C	C	C	C	296	208
156	O	C	O	C	C	O	C	C	O	C	C	C	C	C	294	222
157	O	O	C	C	C	O	C	C	O	C	C	C	C	C	292	240
158	O	C	C	C	C	O	C	C	O	C	C	C	C	C	290	262
159	O	O	O	O	O	C	C	C	O	C	C	C	C	C	288	288
160	C	O	O	O	O	C	C	C	O	C	C	C	C	C	287	159
161	C	C	O	O	O	C	C	C	O	C	C	C	C	C	285	192
162	C	O	C	O	O	C	C	C	O	C	C	C	C	C	283	229
163	C	C	C	O	O	C	C	C	O	C	C	C	C	C	281	270
164	O	O	O	C	O	C	C	C	O	C	C	C	C	C	280	152
165	O	C	O	C	O	C	C	C	O	C	C	C	C	C	278	200
166	O	O	C	C	O	C	C	C	O	C	C	C	C	C	276	252
167	C	O	C	C	O	C	C	C	O	C	C	C	C	C	275	142
168	C	C	C	C	O	C	C	C	O	C	C	C	C	C	273	201

Sector Switches*

* C = Closed or On; O = Open or Off

83325710 C

TABLE 3-21. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	O	C	C	O	O	C	C	C	C	C	O	12600	0
5	O	O	O	O	O	O	C	C	C	O	C	O	O	C	10080	0
6	O	O	O	O	O	C	O	O	O	C	O	C	O	C	8400	0
7	O	O	O	O	O	O	C	O	C	O	C	C	O	C	7200	0
8	O	O	O	C	C	O	O	C	C	C	C	C	O	C	6300	0
9	C	C	O	C	O	C	C	O	C	O	O	O	C	C	5599.50	4.50
10	O	O	O	O	O	C	C	C	O	C	O	O	C	C	5040	0
11	O	C	O	O	C	O	O	O	O	O	C	O	C	C	4581	9
12	O	O	O	O	C	O	O	O	C	O	C	O	C	C	4200	0
13	O	O	O	C	O	C	C	C	C	O	C	O	C	C	3876	12
14	O	O	O	O	O	C	O	C	O	C	C	O	C	C	3600	0
15	O	O	O	O	O	O	C	O	C	C	C	O	C	C	3360	0
16	O	O	C	C	O	O	C	C	C	C	C	O	C	C	3150	0
17	O	O	O	C	O	O	C	O	O	O	O	C	C	C	2964	12
18	O	C	C	O	C	C	O	C	O	O	O	C	C	C	2799	18
19	O	O	O	C	C	O	O	O	C	O	O	C	C	C	2652	12
20	O	O	O	O	C	C	C	O	C	O	O	C	C	C	2520	0
21	O	O	O	O	O	O	C	C	C	O	O	C	C	C	2400	0
22	C	O	O	C	O	O	O	O	O	C	O	C	C	C	2290.50	9
23	O	O	C	C	O	O	C	O	O	C	O	C	C	C	2190	30
24	O	O	O	C	O	O	O	C	O	C	O	C	C	C	2100	0
25	O	O	O	O	O	O	C	C	O	C	O	C	C	C	2016	0
26	O	O	C	O	C	C	C	C	O	C	O	C	C	C	1938	12
27	O	O	C	O	O	C	O	O	C	C	O	C	C	C	1866	18
28	O	O	O	O	C	O	C	O	C	C	O	C	C	C	1800	0
29	O	C	O	C	C	C	C	O	C	C	O	C	C	C	1737	27
30	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1680	0
31	C	O	C	O	O	O	C	C	C	C	O	C	C	C	1624.50	40.50
32	O	C	C	O	O	C	C	C	C	C	O	C	C	C	1575	0
33	O	C	C	O	O	O	O	O	O	O	C	C	C	C	1527	9
34	O	O	C	O	O	C	O	O	O	O	C	C	C	C	1482	12
35	O	O	O	O	O	O	C	O	O	O	C	C	C	C	1440	0
36	C	C	O	C	C	O	C	O	O	O	C	C	C	C	1399.50	18
37	O	O	C	O	C	C	C	O	O	O	C	C	C	C	1362	6
38	O	O	C	C	O	O	O	C	O	O	C	C	C	C	1326	12
39	C	C	O	O	O	C	O	C	O	O	C	C	C	C	1291.50	31.50
40	O	O	O	C	C	C	O	C	O	O	C	C	C	C	1260	0
41	C	O	C	C	O	O	C	C	O	O	C	C	C	C	1228.50	31.50
42	O	O	O	O	O	C	C	C	O	O	C	C	C	C	1200	0
43	C	C	O	O	C	C	C	C	O	O	C	C	C	C	1171.50	25.50
44	C	O	C	O	O	O	O	O	C	O	C	C	C	C	1144.50	42
45	O	C	C	O	C	O	O	O	C	O	C	C	C	C	1119	45

* C = Closed or On; O = Open or Off

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TABLE 3-21.   SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	O	C	C	O	O	C	O	O	C	O	C	C	C	C	1095	30
47	O	C	C	O	C	C	O	O	C	O	C	C	C	C	1071	63
48	O	O	C	O	O	O	C	O	C	O	C	C	C	C	1050	0
49	C	C	O	O	C	O	C	O	C	O	C	C	C	C	1027.50	52.50
50	O	O	O	O	O	C	C	O	C	O	C	C	C	C	1008	0
51	O	C	C	C	O	C	C	O	C	O	C	C	C	C	987	63
52	O	C	O	C	C	C	C	O	C	O	C	C	C	C	969	12
53	C	C	C	O	O	O	O	C	C	O	C	C	C	C	949.50	76.50
54	O	C	O	O	C	O	O	C	C	O	C	C	C	C	933	18
55	O	C	C	C	C	O	O	C	C	O	C	C	C	C	915	75
56	O	O	O	C	O	C	O	C	C	O	C	C	C	C	900	0
57	C	C	O	O	C	C	O	C	C	O	C	C	C	C	883.50	40.50
58	C	O	C	C	C	C	O	C	C	O	C	C	C	C	868.50	27
59	C	C	C	O	O	O	C	C	C	O	C	C	C	C	853.50	43.50
60	O	O	O	O	C	O	C	C	C	O	C	C	C	C	840	0
61	O	C	O	C	C	O	C	C	C	O	C	C	C	C	825	75
62	C	C	O	O	O	C	C	C	C	O	C	C	C	C	811.50	87
63	C	C	O	C	O	C	C	C	C	O	C	C	C	C	799.50	31.50
64	C	C	O	O	C	C	C	C	C	O	C	C	C	C	787.50	0
65	O	O	C	C	C	C	C	C	C	O	C	C	C	C	774	90
66	C	C	O	O	O	O	O	O	O	C	C	C	C	C	763.50	9
67	C	C	O	C	O	O	O	O	O	C	C	C	C	C	751.50	49.50
68	O	C	O	O	C	O	O	O	O	C	C	C	C	C	741	12
69	O	C	O	C	C	O	O	O	O	C	C	C	C	C	729	99
70	O	O	O	O	O	C	O	O	O	C	C	C	C	C	720	0
71	C	C	C	O	O	C	O	O	O	C	C	C	C	C	709.50	25.50
72	O	C	C	C	O	C	O	O	O	C	C	C	C	C	699	72
73	O	O	C	O	C	C	O	O	O	C	C	C	C	C	690	30
74	O	C	O	C	C	C	O	O	O	C	C	C	C	C	681	6
75	O	O	O	O	O	O	C	O	O	C	C	C	C	C	672	0
76	O	C	C	O	O	O	C	O	O	C	C	C	C	C	663	12
77	O	O	C	C	O	O	C	O	O	C	C	C	C	C	654	42
78	O	C	O	O	C	O	C	O	O	C	C	C	C	C	645	90
79	C	C	C	O	C	O	C	O	O	C	C	C	C	C	637.50	37.50
80	O	O	C	C	C	O	C	O	O	C	C	C	C	C	630	0
81	O	C	O	O	O	C	C	O	O	C	C	C	C	C	621	99
82	C	C	C	O	O	C	C	O	O	C	C	C	C	C	613.50	93
83	O	O	C	C	O	C	C	O	O	C	C	C	C	C	606	102
84	O	O	O	O	C	C	C	O	O	C	C	C	C	C	600	0
85	C	O	C	O	C	C	C	O	O	C	C	C	C	C	592.50	37.50
86	O	C	O	C	C	C	C	O	O	C	C	C	C	C	585	90
87	O	C	C	C	C	C	C	O	O	C	C	C	C	C	579	27

* C = Closed or On; O = Open or Off

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TABLE 3-21. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	C	O	O	O	O	O	C	O	C	C	C	C	C	571.50	108
89	C	C	C	O	O	O	O	C	O	C	C	C	C	C	565.50	70.50
90	C	C	O	C	O	O	O	C	O	C	C	C	C	C	559.50	45
91	C	C	C	C	O	O	O	C	O	C	C	C	C	C	553.50	31.50
92	C	C	O	O	C	O	O	C	O	C	C	C	C	C	547.50	30
93	C	C	C	O	C	O	O	C	O	C	C	C	C	C	541.50	40.50
94	C	C	O	C	C	O	O	C	O	C	C	C	C	C	535.50	63
95	C	C	C	C	C	O	O	C	O	C	C	C	C	C	529.50	97.50
96	O	C	O	O	O	C	O	C	O	C	C	C	C	C	525	0
97	O	C	C	O	O	C	O	C	O	C	C	C	C	C	519	57
98	O	C	O	C	O	C	O	C	O	C	C	C	C	C	513	126
99	C	O	C	C	O	C	O	C	O	C	C	C	C	C	508.50	58.50
100	O	O	O	O	C	C	O	C	O	C	C	C	C	C	504	0
101	O	O	C	O	C	C	O	C	O	C	C	C	C	C	498	102
102	C	C	C	O	C	C	O	C	O	C	C	C	C	C	493.50	63
103	O	C	O	C	C	C	O	C	O	C	C	C	C	C	489	33
104	C	O	C	C	C	C	O	C	O	C	C	C	C	C	484.50	12
105	O	O	O	O	O	O	C	C	O	C	C	C	C	C	480	0
106	O	O	C	O	O	O	C	C	C	C	C	C	C	C	474	156
107	O	C	C	O	O	O	C	C	O	C	C	C	C	C	471	3
108	C	O	O	C	O	O	C	C	O	C	C	C	C	C	466.50	18
109	O	O	C	C	O	O	C	C	O	C	C	C	C	C	462	42
110	C	C	C	C	O	O	C	C	O	C	C	C	C	C	457.50	75
111	O	C	O	O	C	O	C	C	O	C	C	C	C	C	453	117
112	O	O	C	O	C	O	C	C	O	C	C	C	C	C	450	0
113	C	C	C	O	C	O	C	C	O	C	C	C	C	C	445.50	58.50
114	O	C	O	C	C	O	C	C	O	C	C	C	C	C	441	126
115	O	O	C	C	C	O	C	C	O	C	C	C	C	C	438	30
116	C	C	C	C	C	O	C	C	O	C	C	C	C	C	433.50	114
117	C	O	O	O	O	C	C	C	O	C	C	C	C	C	430.50	31.50
118	O	O	C	O	O	C	C	C	O	C	C	C	C	C	426	132
119	O	C	C	O	O	C	C	C	O	C	C	C	C	C	423	63
120	O	O	O	C	O	C	C	C	O	C	C	C	C	C	420	0
121	C	C	O	C	O	C	C	C	O	C	C	C	C	C	415.50	124.50
122	C	O	C	C	O	C	C	C	O	C	C	C	C	C	412.50	75
123	C	C	C	C	O	C	C	C	O	C	C	C	C	C	409.50	31.50
124	O	C	O	O	C	C	C	C	O	C	C	C	C	C	405	180
125	O	O	C	O	C	C	C	C	O	C	C	C	C	C	402	150
126	O	C	C	O	C	C	C	C	O	C	C	C	C	C	399	126
127	O	O	O	C	C	C	C	C	O	C	C	C	C	C	396	108
128	O	C	O	C	C	C	C	C	O	C	C	C	C	C	393	96
129	O	O	C	C	C	C	C	C	O	C	C	C	C	C	390	90

* C = Closed or On; O = Open or Off

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TABLE 3-21.   SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
130	O	C	C	C	C	C	C	C	O	C	C	C	C	C	387	90
131	O	O	O	O	O	O	O	O	C	C	C	C	C	C	384	96
132	O	C	O	O	O	O	O	O	C	C	C	C	C	C	381	108
133	O	O	C	O	O	O	O	O	C	C	C	C	C	C	378	126
134	O	C	C	O	O	O	O	O	C	C	C	C	C	C	375	150
135	O	O	O	C	O	O	O	O	C	C	C	C	C	C	372	180
136	C	O	O	C	O	O	O	O	C	C	C	C	C	C	370.50	12
137	C	C	O	C	O	O	O	O	C	C	C	C	C	C	367.50	52.50
138	C	O	C	C	O	O	O	O	C	C	C	C	C	C	364.50	99
139	C	C	C	C	O	O	O	O	C	C	C	C	C	C	361.50	151.50
140	O	O	O	O	C	O	O	O	C	C	C	C	C	C	360	0
141	O	C	O	O	C	O	O	O	C	C	C	C	C	C	357	63
142	O	O	C	O	C	O	O	O	C	C	C	C	C	C	354	132
143	O	C	C	O	C	O	O	O	C	C	C	C	C	C	351	207
144	C	C	C	O	C	O	O	O	C	C	C	C	C	C	349.50	72
145	C	O	O	C	C	O	O	O	C	C	C	C	C	C	346.50	157.50
146	O	C	O	C	C	O	O	O	C	C	C	C	C	C	345	30
147	O	O	C	C	C	O	O	O	C	C	C	C	C	C	342	126
148	C	O	C	C	C	O	O	O	C	C	C	C	C	C	340.50	6
149	C	C	C	C	C	O	O	O	C	C	C	C	C	C	337.50	112.50
150	O	O	O	O	O	C	O	O	C	C	C	C	C	C	336	0
151	O	C	O	O	O	C	O	O	C	C	C	C	C	C	333	117
152	C	C	O	O	O	C	O	O	C	C	C	C	C	C	331.50	12
153	C	O	C	O	O	C	O	O	C	C	C	C	C	C	328.50	139.50
154	O	C	C	O	O	C	O	O	C	C	C	C	C	C	327	42
155	O	O	O	C	O	C	O	O	C	C	C	C	C	C	324	180
156	C	O	O	C	O	C	O	O	C	C	C	C	C	C	322.50	90
157	O	C	O	C	O	C	O	O	C	C	C	C	C	C	321	3
158	O	O	C	C	O	C	O	O	C	C	C	C	C	C	318	156
159	C	O	C	C	O	C	O	O	C	C	C	C	C	C	316.50	76.50
160	O	C	C	C	O	C	O	O	C	C	C	C	C	C	315	0
161	O	O	O	O	C	C	O	O	C	C	C	C	C	C	312	168
162	C	O	O	O	C	C	O	O	C	C	C	C	C	C	310.50	99
163	O	C	O	O	C	C	O	O	C	C	C	C	C	C	309	33
164	O	O	C	O	C	C	O	O	C	C	C	C	C	C	306	216
165	C	O	C	O	C	C	O	O	C	C	C	C	C	C	304.50	157.50
166	O	C	C	O	C	C	O	O	C	C	C	C	C	C	303	102
167	C	C	C	O	C	C	O	O	C	C	C	C	C	C	301.50	49.50
168	O	O	O	C	C	C	O	O	C	C	C	C	C	C	300	0

* C = Closed or On; O = Open or Off

TABLE 3-22. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-UP METHOD

Number of Sectors	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}	Bytes in Early Sectors	Bytes in Last Sector
4	O	O	O	O	C	C	O	O	C	C	C	C	C	O	12600	12600
5	O	O	O	O	O	O	C	C	C	O	C	O	O	C	10080	10080
6	O	O	O	O	O	C	O	O	O	C	O	C	O	C	8400	8400
7	O	O	O	O	O	O	C	O	C	O	C	C	O	C	7200	7200
8	O	O	O	C	C	O	O	C	C	C	C	C	O	C	6300	6300
9	O	C	O	C	O	C	C	O	C	O	O	O	C	C	5601	5592
10	O	O	O	O	O	C	C	C	O	C	O	O	C	C	5040	5040
11	C	O	O	O	C	O	O	O	O	O	C	O	C	C	4582.50	4575
12	O	O	O	O	C	O	O	O	C	O	C	O	C	C	4200	4200
13	C	C	C	O	O	C	C	C	C	O	C	O	C	C	3877.50	3870
14	O	O	O	O	O	C	O	C	O	C	C	O	C	C	3600	3600
15	O	O	O	O	O	O	C	O	C	C	C	O	O	C	3360	3360
16	O	O	C	C	O	O	C	C	C	C	C	O	C	C	3150	3150
17	C	C	C	O	O	O	C	O	O	O	O	C	C	C	2965.50	2952
18	C	O	C	O	C	C	O	C	O	O	O	C	C	C	2800.50	2791.50
19	C	C	C	O	C	O	O	O	C	O	O	C	C	C	2653.50	2637
20	O	O	O	O	C	C	C	O	C	O	O	C	C	C	2520	2520
21	O	O	O	O	O	O	C	C	C	O	O	C	C	C	2400	2400
22	O	O	O	C	O	O	O	O	O	C	O	C	C	C	2292	2268
23	C	C	O	C	O	O	C	O	O	C	O	C	C	C	2191.50	2187
24	O	O	O	C	O	O	O	C	O	C	O	C	C	C	2100	2100
25	O	O	O	O	O	O	C	C	O	C	O	C	C	C	2016	2016
26	C	C	O	O	C	C	C	C	O	C	O	C	C	C	1939.50	1912.50
27	C	C	O	O	O	C	O	O	C	C	O	C	C	C	1867.50	1845
28	O	O	O	O	C	O	C	O	C	C	O	C	C	C	1800	1800
29	C	O	O	C	C	C	C	O	O	C	O	C	C	C	1738.50	1722
30	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1680	1680
31	O	O	C	O	O	O	C	C	C	C	O	C	C	C	1626	1620
32	O	C	C	O	O	C	C	C	C	C	O	C	C	C	1575	1575
33	C	O	C	O	O	O	O	O	O	O	C	C	C	C	1528.50	1488
34	C	C	O	O	O	C	O	O	O	O	C	C	C	C	1483.50	1444.50
35	O	O	O	O	O	O	C	O	O	O	C	C	C	C	1440	1440
36	O	C	O	C	C	O	C	O	O	O	C	C	C	C	1401	1365
37	C	C	O	O	C	C	C	O	O	O	C	C	C	C	1363.50	1314
38	C	C	O	C	O	O	O	C	O	O	C	C	C	C	1327.50	1282.50
39	O	C	O	O	O	C	O	C	O	O	C	C	C	C	1293	1266
40	O	O	O	C	C	C	O	C	O	O	C	C	C	C	1260	1260
41	O	O	C	C	O	O	C	C	O	O	C	C	C	C	1230	1200
42	O	O	O	O	O	C	C	C	O	O	C	C	C	C	1200	1200
43	O	C	O	O	C	C	C	C	O	O	C	C	C	C	1173	1134
44	O	O	C	O	O	O	O	O	C	O	C	C	C	C	1146	1122
45	C	O	C	O	C	O	O	O	C	O	C	C	C	C	1120.50	1098

* C = Closed or On; O = Open or Off

83325710 C

TABLE 3-22.   SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	C	O	C	O	O	C	O	O	C	O	C	C	C	C	1096.50	1057.50
47	C	O	C	O	C	C	O	O	C	O	C	C	C	C	1072.50	1065
48	O	O	C	O	O	O	C	O	C	O	C	C	C	C	1050	1050
49	O	C	O	O	C	O	C	O	C	O	C	C	C	C	1029	1008
50	O	O	O	O	O	C	C	O	C	O	C	C	C	C	1008	1008
51	C	O	C	C	O	C	C	O	C	O	C	C	C	C	988.50	975
52	C	O	O	C	C	C	C	O	C	O	C	C	C	C	970.50	904.50
53	O	C	C	O	O	O	O	C	C	O	C	C	C	C	951	948
54	C	O	O	O	C	O	O	C	C	O	C	C	C	C	934.50	871.50
55	C	O	C	C	C	O	O	C	C	O	C	C	C	C	916.50	909
56	O	O	O	C	O	C	O	C	C	O	C	C	C	C	900	900
57	O	C	O	O	C	C	O	C	C	O	C	C	C	C	885	840
58	O	O	C	C	C	C	O	C	C	O	C	C	C	C	870	810
59	O	C	C	O	O	O	C	C	C	O	C	C	C	C	855	810
60	O	O	O	O	C	O	C	C	C	O	C	C	C	C	840	840
61	C	O	O	C	C	O	C	C	C	O	C	C	C	C	826.50	810
62	O	C	O	O	O	C	C	C	C	O	C	C	C	C	813	807
63	O	C	O	C	O	C	C	C	C	O	C	C	C	C	801	738
64	C	C	O	O	C	C	C	C	C	O	C	C	C	C	787.50	787.50
65	C	C	O	C	C	C	C	C	C	O	C	C	C	C	775.50	768
66	O	C	O	O	O	O	O	O	O	C	C	C	C	C	765	675
67	O	C	O	C	O	O	O	O	O	C	C	C	C	C	753	702
68	C	O	O	O	C	O	O	O	O	C	C	C	C	C	742.50	652.50
69	C	O	O	C	C	O	O	O	O	C	C	C	C	C	730.50	726
70	O	O	O	O	O	C	O	O	O	C	C	C	C	C	720	720
71	O	C	C	O	O	C	O	O	O	C	C	C	C	C	711	630
72	C	O	C	C	O	C	O	O	O	C	C	C	C	C	700.50	664.50
73	C	C	O	O	C	C	O	O	O	C	C	C	C	C	691.50	612
74	C	O	O	C	C	C	O	O	O	C	C	C	C	C	682.50	577.50
75	O	O	O	O	O	O	C	O	O	C	C	C	C	C	672	672
76	C	O	C	O	O	O	C	O	O	C	C	C	C	C	664.50	562.50
77	C	C	O	C	O	O	C	O	O	C	C	C	C	C	655.50	582
78	C	O	O	O	C	O	C	O	O	C	C	C	C	C	646.50	619.50
79	O	C	C	O	C	O	C	O	O	C	C	C	C	C	639	558
80	O	O	C	C	C	O	C	O	O	C	C	C	C	C	630	630
81	C	O	O	O	O	C	C	O	O	C	C	C	C	C	622.50	600
82	O	C	C	O	O	C	C	O	O	C	C	C	C	C	615	585
83	C	C	O	C	O	C	C	O	O	C	C	C	C	C	607.50	585
84	O	O	O	O	C	C	C	O	O	C	C	C	C	C	600	600
85	O	O	C	O	C	C	C	O	O	C	C	C	C	C	594	504
86	C	O	O	C	C	C	C	O	O	C	C	C	C	C	586.50	547.50
87	C	O	C	C	C	C	C	O	O	C	C	C	C	C	580.50	477

* C = Closed or On; O = Open or Off

TABLE 3-22.   SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	O	C	O	O	O	O	O	C	O	C	C	C	C	C	573	549
89	O	C	C	O	O	O	O	C	O	C	C	C	C	C	567	504
90	O	C	O	C	O	O	O	C	O	C	C	C	C	C	561	471
91	O	C	C	C	O	O	O	C	O	C	C	C	C	C	555	450
92	O	C	O	O	C	O	O	C	O	C	C	C	C	C	549	441
93	O	C	C	O	C	O	O	C	O	C	C	C	C	C	543	444
94	O	C	O	C	C	O	O	C	O	C	C	C	C	C	537	459
95	O	C	C	C	C	O	O	C	O	C	C	C	C	C	531	486
96	O	C	O	O	O	C	O	C	O	C	C	C	C	C	525	525
97	C	O	C	O	O	C	O	C	O	C	C	C	C	C	520.50	432
98	C	O	O	C	O	C	O	C	O	C	C	C	C	C	514.50	493.50
99	O	O	C	C	O	C	O	C	O	C	C	C	C	C	510	420
100	O	O	O	O	C	C	O	C	O	C	C	C	C	C	504	504
101	C	C	O	O	C	C	O	C	O	C	C	C	C	C	499.50	450
102	O	C	C	O	C	C	O	C	O	C	C	C	C	C	495	405
103	C	O	O	C	C	C	O	C	O	C	C	C	C	C	490.50	369
104	O	O	C	C	C	C	O	C	O	C	C	C	C	C	486	342
105	O	O	O	O	O	O	C	C	O	C	C	C	C	C	480	480
106	C	C	O	O	O	O	C	C	O	C	C	C	C	C	475.50	472.50
107	C	O	C	O	O	O	C	C	O	C	C	C	C	C	472.50	315
108	O	O	O	C	O	O	C	C	O	C	C	C	C	C	468	324
109	C	C	O	C	O	O	C	C	O	C	C	C	C	C	463.50	342
110	O	C	C	C	O	O	C	C	O	C	C	C	C	C	459	369
111	C	O	O	O	C	O	C	C	O	C	C	C	C	C	454.50	405
112	O	O	C	O	C	O	C	C	O	C	C	C	C	C	450	450
113	O	C	C	O	C	O	C	C	O	C	C	C	C	C	447	336
114	C	O	O	C	C	O	C	C	O	C	C	C	C	C	442.50	397.50
115	C	C	O	C	C	O	C	C	O	C	C	C	C	C	439.50	297
116	O	C	C	C	C	O	C	C	O	C	C	C	C	C	435	375
117	O	O	O	O	O	C	C	C	O	C	C	C	C	C	432	288
118	C	C	O	O	O	C	C	C	O	C	C	C	C	C	427.50	382.50
119	C	O	C	O	O	C	C	C	O	C	C	C	C	C	424.50	309
120	O	O	O	C	O	C	C	C	O	C	C	C	C	C	420	420
121	O	C	O	C	O	C	C	C	O	C	C	C	C	C	417	360
122	O	O	C	C	O	C	C	C	O	C	C	C	C	C	414	306
123	O	C	C	C	O	C	C	C	O	C	C	C	C	C	411	258
124	C	O	O	O	C	C	C	C	O	C	C	C	C	C	406.50	400.50
125	C	C	O	O	C	C	C	C	O	C	C	C	C	C	403.50	366
126	C	O	C	O	C	C	C	C	O	C	C	C	C	C	400.50	337.50
127	C	C	C	O	C	C	C	C	O	C	C	C	C	C	397.50	315
128	C	O	O	C	C	C	C	C	O	C	C	C	C	C	394.50	298.50
129	C	C	O	C	C	C	C	C	O	C	C	C	C	C	391.50	288

* C = Closed or On; O = Open or Off

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83325710 C

TABLE 3-22. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 2.016 MHz CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
130	C	O	C	C	C	C	C	C	O	C	C	C	C	C	388.50	283.50
131	C	C	C	C	C	C	C	C	O	C	C	C	C	C	385.50	285
132	C	O	O	O	O	O	O	O	C	C	C	C	C	C	382.50	292.50
133	C	C	O	O	O	O	O	O	C	C	C	C	C	C	379.50	306
134	C	O	C	O	O	O	O	O	C	C	C	C	C	C	376.50	325.50
135	C	C	C	O	O	O	O	O	C	C	C	C	C	C	373.50	351
136	O	O	O	C	O	O	O	O	C	C	C	C	C	C	372	180
137	O	C	O	C	O	O	O	O	C	C	C	C	C	C	369	216
138	O	O	C	C	O	O	O	O	C	C	C	C	C	C	366	258
139	O	C	C	C	O	O	O	O	C	C	C	C	C	C	363	306
140	O	O	O	O	C	O	O	O	C	C	C	C	C	C	360	360
141	C	O	O	O	C	O	O	O	C	C	C	C	C	C	358.50	210
142	C	C	O	O	C	O	O	O	C	C	C	C	C	C	355.50	274.50
143	C	O	C	O	C	O	O	O	C	C	C	C	C	C	352.50	345
144	O	C	C	O	C	O	O	O	C	C	C	C	C	C	351	207
145	O	O	O	C	C	O	O	O	C	C	C	C	C	C	348	288
146	C	O	O	C	C	O	O	O	C	C	C	C	C	C	346.50	157.50
147	C	C	O	C	C	O	O	O	C	C	C	C	C	C	343.50	249
148	O	O	C	C	C	O	O	O	C	C	C	C	C	C	342	126
149	O	C	C	C	C	O	O	O	C	C	C	C	C	C	339	228
150	O	O	O	O	O	C	O	O	C	C	C	C	C	C	336	336
151	C	O	O	O	O	C	O	O	C	C	C	C	C	C	334.50	225
152	O	C	O	O	O	C	O	O	C	C	C	C	C	C	333	117
153	O	O	C	O	O	C	O	O	C	C	C	C	C	C	330	240
154	C	O	C	O	O	C	O	O	C	C	C	C	C	C	328.50	139.50
155	C	C	C	O	O	C	O	O	C	C	C	C	C	C	325.50	273
156	O	O	O	C	O	C	O	O	C	C	C	C	C	C	324	180
157	C	O	O	C	O	C	O	O	C	C	C	C	C	C	322.50	90
158	C	C	O	C	O	C	O	O	C	C	C	C	C	C	319.50	238.50
159	O	O	C	C	O	C	O	O	C	C	C	C	C	C	318	156
160	O	C	C	C	O	C	O	O	C	C	C	C	C	C	315	315
161	C	C	C	C	O	C	O	O	C	C	C	C	C	C	313.50	240
162	O	O	O	O	C	C	O	O	C	C	C	C	C	C	312	168
163	C	O	O	O	C	C	O	O	C	C	C	C	C	C	310.50	99
164	C	C	O	O	C	C	O	O	C	C	C	C	C	C	307.50	277.50
165	O	O	C	O	C	C	O	O	C	C	C	C	C	C	306	216
166	C	O	C	O	C	C	O	O	C	C	C	C	C	C	304.50	157.50
167	O	C	C	O	C	C	O	O	C	C	C	C	C	C	303	102
168	O	O	O	C	C	C	O	O	C	C	C	C	C	C	300	300

* C = Closed or On; O = Open or Off

TABLE 3-23. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	C	O	O	C	C	O	C	C	C	O	O	12600	0
5	O	O	O	O	O	C	O	C	O	O	O	C	C	O	10080	0
6	O	O	O	O	C	C	O	O	C	C	C	C	C	O	8400	0
7	O	O	O	O	O	C	C	C	C	C	O	O	O	C	7200	0
8	O	O	C	O	O	C	C	O	C	C	C	O	O	C	6300	0
9	O	O	O	O	O	C	O	O	O	C	O	C	O	C	5600	0
10	O	O	O	O	C	O	C	O	O	O	C	C	O	C	5040	0
11	C	C	O	C	C	O	O	O	O	C	C	C	O	C	4581	9
12	O	O	O	C	C	O	O	C	C	C	C	C	O	C	4200	0
13	O	O	C	C	C	O	C	C	O	O	O	O	C	C	3876	12
14	O	O	O	O	C	C	C	C	C	O	O	O	C	C	3600	0
15	O	O	O	O	O	C	C	C	O	C	O	O	C	C	3360	0
16	O	C	O	O	C	C	O	C	C	C	O	O	C	C	3150	0
17	O	O	C	C	O	C	C	O	O	O	C	O	C	C	2964	12
18	O	O	O	O	C	O	O	O	C	O	C	O	C	C	2800	0
19	O	O	C	O	O	C	O	C	C	O	C	O	C	C	2652	12
20	O	O	O	C	O	C	O	O	O	C	C	O	C	C	2520	0
21	O	O	O	O	O	C	O	C	O	C	C	O	C	C	2400	0
22	O	C	C	C	O	O	O	O	C	C	C	O	C	C	2290	20
23	C	O	O	O	C	C	C	O	C	C	C	O	C	C	2191	7
24	O	O	C	C	O	O	C	C	C	C	C	O	C	C	2100	0
25	O	O	O	O	O	C	O	O	O	O	O	C	C	C	2016	0
26	O	C	C	C	O	C	C	O	O	O	O	C	C	C	1938	12
27	O	C	C	O	C	C	O	C	O	O	O	C	C	C	1866	18
28	O	O	O	C	C	C	C	C	O	O	O	C	C	C	1800	0
29	C	C	C	O	C	C	O	O	C	O	O	C	C	C	1737	27
30	O	O	O	O	C	C	C	O	C	O	O	C	C	C	1680	0
31	C	C	C	O	O	C	O	C	C	O	O	C	C	C	1625	25
32	C	O	O	C	C	O	C	C	C	O	O	C	C	C	1575	0
33	C	O	O	C	O	O	O	O	O	C	O	C	C	C	1527	9
34	O	C	C	O	C	C	O	O	O	C	O	C	C	C	1482	12
35	O	O	O	O	O	C	C	O	O	C	O	C	C	C	1440	0
36	O	O	O	C	O	O	O	O	C	C	O	C	C	C	1400	0
37	O	C	C	C	O	C	O	C	O	C	O	C	C	C	1362	6
38	O	C	O	O	C	O	C	C	O	C	O	C	C	C	1326	12
39	O	O	C	O	C	C	C	C	O	C	O	C	C	C	1292	12
40	O	O	C	O	C	O	O	O	C	C	O	C	C	C	1260	0
41	C	C	O	O	C	C	O	O	C	C	O	C	C	C	1229	11
42	O	O	O	O	C	O	C	O	C	C	O	C	C	C	1200	0
43	O	O	C	C	O	C	C	O	C	C	O	C	C	C	1172	4
44	C	C	C	O	O	O	O	C	C	C	O	C	C	C	1145	20
45	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1120	0

* C = Closed or On; O = Open or Off

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TABLE 3-23.   SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	C	O	O	C	C	C	O	C	C	C	O	C	C	C	1095	30
47	O	O	O	O	C	O	C	C	C	C	O	C	C	C	1072	16
48	O	C	C	O	O	C	C	C	C	C	O	C	C	C	1050	0
49	O	O	C	C	C	C	C	C	C	C	O	C	C	C	1028	28
50	O	O	O	O	C	O	O	O	O	O	C	C	C	C	1008	0
51	O	O	C	O	O	C	O	O	O	O	C	C	C	C	988	12
52	C	C	C	O	C	C	O	O	O	O	C	C	C	C	969	12
53	O	C	O	C	O	O	C	O	O	O	C	C	C	C	950	50
54	C	C	O	C	C	O	C	O	O	O	C	C	C	C	933	18
55	O	O	C	C	O	C	C	O	O	O	C	C	C	C	916	20
56	O	O	C	C	C	C	C	O	O	O	C	C	C	C	900	0
57	O	O	C	C	O	O	O	C	O	O	C	C	C	C	884	12
58	O	O	C	C	C	O	O	C	O	O	C	C	C	C	868	56
59	O	C	O	C	O	C	O	C	O	O	C	C	C	C	854	14
60	O	O	O	C	C	C	O	C	O	O	C	C	C	C	840	0
61	O	C	C	O	O	O	C	C	O	O	C	C	C	C	826	14
62	O	O	C	O	C	O	C	C	O	O	C	C	C	C	812	56
63	O	O	O	O	O	C	C	C	O	O	C	C	C	C	800	0
64	C	O	C	C	O	C	C	C	O	O	C	C	C	C	787	32
65	C	O	O	C	C	C	C	C	O	O	C	C	C	C	775	25
66	C	O	C	O	O	O	O	O	C	O	C	C	C	C	763	42
67	O	O	O	O	C	O	O	O	C	O	C	C	C	C	752	16
68	C	C	O	C	C	O	O	O	C	O	C	C	C	C	741	12
69	O	C	C	O	O	C	O	O	C	O	C	C	C	C	730	30
70	O	O	O	O	C	C	O	O	C	O	C	C	C	C	720	0
71	C	C	O	C	C	C	O	O	C	O	C	C	C	C	709	61
72	O	O	C	O	O	O	C	O	C	O	C	C	C	C	700	0
73	O	C	C	C	O	O	C	O	C	O	C	C	C	C	690	30
74	C	C	C	O	C	O	C	O	C	O	C	C	C	C	681	6
75	O	O	O	O	O	C	C	O	C	O	C	C	C	C	672	0
76	C	O	O	C	O	C	C	O	C	O	C	C	C	C	663	12
77	O	C	O	O	C	C	C	O	C	O	C	C	C	C	654	42
78	O	C	O	C	C	C	C	O	C	O	C	C	C	C	646	12
79	C	C	O	O	O	O	O	C	C	O	C	C	C	C	637	77
80	O	C	O	C	O	O	O	C	C	O	C	C	C	C	630	0
81	O	C	O	O	C	O	O	C	C	O	C	C	C	C	622	18
82	O	C	O	C	C	O	O	C	C	O	C	C	C	C	614	52
83	C	O	O	O	O	C	O	C	C	O	C	C	C	C	607	19
84	O	O	O	C	O	C	O	C	C	O	C	C	C	C	600	0
85	O	O	O	O	C	C	O	C	C	O	C	C	C	C	592	80
86	O	C	C	O	C	C	O	C	C	O	C	C	C	C	586	4
87	C	O	C	C	C	C	O	C	C	O	C	C	C	C	579	27

* C = Closed or On; O = Open or Off

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TABLE 3-23. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	O	O	C	O	O	O	C	C	C	O	C	C	C	C	572	64
89	O	C	O	C	O	O	C	C	C	O	C	C	C	C	566	26
90	O	O	O	O	C	O	C	C	C	O	C	C	C	C	560	0
91	C	C	C	O	C	O	C	C	C	O	C	C	C	C	553	77
92	C	O	C	C	C	O	C	C	C	O	C	C	C	C	547	76
93	C	C	O	O	O	C	C	C	C	O	C	C	C	C	541	87
94	O	O	O	C	O	C	C	C	C	O	C	C	C	C	536	16
95	O	C	C	C	O	C	C	C	C	O	C	C	C	C	530	50
96	C	C	O	O	C	C	C	C	C	O	C	C	C	C	525	0
97	C	O	O	C	C	C	C	C	C	O	C	C	C	C	519	57
98	O	C	C	C	C	C	C	C	C	O	C	C	C	C	514	28
99	C	C	O	O	O	O	O	O	O	C	C	C	C	C	509	9
100	O	O	O	C	O	O	O	O	O	C	C	C	C	C	504	0
101	C	O	C	C	O	O	O	O	O	C	C	C	C	C	499	1
102	O	C	O	O	C	O	O	O	O	C	C	C	C	C	494	12
103	C	C	C	O	C	O	O	O	O	C	C	C	C	C	489	33
104	O	O	C	C	C	O	O	O	O	C	C	C	C	C	484	64
105	O	O	O	O	O	C	O	O	O	C	C	C	C	C	480	0
106	C	O	C	O	O	O	O	O	O	C	C	C	C	C	475	50
107	C	O	O	C	O	C	O	O	O	C	C	C	C	C	471	3
108	O	C	C	C	O	C	O	O	O	C	C	C	C	C	466	72
109	O	C	O	O	C	C	O	O	O	C	C	C	C	C	462	42
110	O	C	C	O	C	C	O	O	O	C	C	C	C	C	458	20
111	O	C	O	C	C	C	O	O	O	C	C	C	C	C	454	6
112	O	C	C	C	C	C	O	O	O	C	C	C	C	C	450	0
113	O	C	O	O	O	O	C	O	O	C	C	C	C	C	446	2
114	O	C	C	O	O	O	C	O	O	C	C	C	C	C	442	12
115	O	C	O	C	O	O	C	O	O	C	C	C	C	C	438	30
116	O	C	C	C	O	O	C	O	O	C	C	C	C	C	434	56
117	O	C	O	O	C	O	C	O	O	C	C	C	C	C	430	90
118	C	O	C	O	C	O	C	O	O	C	C	C	C	C	427	14
119	C	O	O	C	C	O	C	O	O	C	C	C	C	C	423	63
120	O	O	C	C	C	O	C	O	O	C	C	C	C	C	420	0
121	O	O	O	O	O	C	C	O	O	C	C	C	C	C	416	64
122	C	C	O	O	O	C	C	O	O	C	C	C	C	C	413	14
123	C	C	C	O	O	C	C	O	O	C	C	C	C	C	409	93
124	O	C	O	C	O	C	C	O	O	C	C	C	C	C	406	56
125	C	O	C	C	O	C	C	O	O	C	C	C	C	C	403	25
126	O	O	O	O	C	C	C	O	O	C	C	C	C	C	400	0
127	O	O	C	O	C	C	C	O	O	C	C	C	C	C	396	108
128	C	C	C	O	C	C	C	O	O	C	C	C	C	C	393	96
129	O	C	O	C	C	C	C	O	O	C	C	C	C	C	390	90

* C = Closed or On; O = Open or Off

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3-108

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TABLE 3-23. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-DOWN METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Usable Sectors	Bytes in Runt Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
130	C	O	C	C	C	C	C	O	O	C	C	C	C	C	387	90
131	O	O	O	O	O	O	O	C	O	C	C	C	C	C	384	96
132	C	C	O	O	O	O	O	C	O	C	C	C	C	C	381	108
133	O	C	C	O	O	O	O	C	O	C	C	C	C	C	378	126
134	O	O	O	C	O	O	O	C	O	C	C	C	C	C	376	16
135	C	C	O	C	O	O	O	C	O	C	C	C	C	C	373	45
136	O	C	C	C	O	O	O	C	O	C	C	C	C	C	370	80
137	C	O	O	O	C	O	O	C	O	C	C	C	C	C	367	121
138	C	C	O	O	C	O	O	C	O	C	C	C	C	C	365	30
139	O	C	C	O	C	O	O	C	O	C	C	C	C	C	362	82
140	O	O	O	C	C	O	O	C	O	C	C	C	C	C	360	0
141	C	C	O	C	C	O	O	C	O	C	C	C	C	C	357	63
142	O	C	C	C	C	O	O	C	O	C	C	C	C	C	354	132
143	O	O	O	O	O	C	O	C	O	C	C	C	C	C	352	64
144	O	C	O	O	O	C	O	C	O	C	C	C	C	C	350	0
145	C	O	C	O	O	C	O	C	O	C	C	C	C	C	347	85
146	C	C	C	O	O	C	O	C	O	C	C	C	C	C	345	30
147	O	C	O	C	O	C	O	C	O	C	C	C	C	C	342	126
148	O	O	C	C	O	C	O	C	O	C	C	C	C	C	340	80
149	O	C	C	C	O	C	O	C	O	C	C	C	C	C	338	38
150	O	O	O	O	C	C	O	C	O	C	C	C	C	C	336	0
151	C	C	O	O	C	C	O	C	O	C	C	C	C	C	333	117
152	C	O	C	O	C	C	O	C	O	C	C	C	C	C	331	88
153	C	C	C	O	C	C	O	C	O	C	C	C	C	C	329	63
154	C	O	O	C	C	C	O	C	O	C	C	C	C	C	327	42
155	C	C	O	C	C	C	O	C	O	C	C	C	C	C	325	25
156	C	O	C	C	C	C	O	C	O	C	C	C	C	C	323	12
157	C	C	C	C	C	C	O	C	O	C	C	C	C	C	321	3
158	O	C	O	O	O	O	C	C	O	C	C	C	C	C	318	156
159	O	O	C	O	O	O	C	C	O	C	C	C	C	C	316	156
160	C	O	C	O	O	O	C	C	O	C	C	C	C	C	315	0
161	C	C	C	O	O	O	C	C	O	C	C	C	C	C	313	7
162	C	O	O	C	O	O	C	C	O	C	C	C	C	C	311	18
163	C	C	O	C	O	O	C	C	O	C	C	C	C	C	309	33
164	C	O	C	C	O	O	C	C	O	C	C	C	C	C	307	52
165	C	C	C	C	O	O	C	C	O	C	C	C	C	C	305	75
166	C	O	O	O	C	O	C	C	O	C	C	C	C	C	303	102
167	C	C	O	O	C	O	C	C	O	C	C	C	C	C	301	133
168	O	O	C	O	C	O	C	C	O	C	C	C	C	C	300	0

* C = Closed or On; O = Open or Off

TABLE 3-24.   SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-UP METHOD

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
4	O	O	O	C	O	O	C	C	O	C	C	C	O	O	12600	12600
5	O	O	O	O	O	C	O	C	O	O	O	C	C	O	10080	10080
6	O	O	O	O	C	C	O	O	C	C	C	C	C	O	8400	8400
7	O	O	O	O	O	C	C	C	C	C	O	O	O	C	7200	7200
8	O	O	C	O	O	C	C	O	C	C	C	O	O	C	6300	6300
9	O	O	O	O	O	C	O	O	O	C	O	C	O	C	5600	5600
10	O	O	O	O	C	O	C	O	O	O	C	C	O	C	5040	5040
11	O	C	O	C	C	O	O	O	O	C	C	C	O	C	4582	4580
12	O	O	O	C	C	O	O	C	C	C	C	C	O	C	4200	4200
13	C	C	O	C	C	O	C	C	O	O	O	O	C	C	3877	3876
14	O	O	O	O	C	C	C	C	C	O	O	O	C	C	3600	3600
15	O	O	O	O	O	C	C	C	O	C	O	O	C	C	3360	3360
16	O	C	O	O	C	C	O	C	C	C	O	O	C	C	3150	3150
17	C	C	O	C	O	C	C	O	O	O	C	O	C	C	2965	2960
18	O	O	O	O	C	O	O	O	C	O	C	O	C	C	2800	2800
19	C	C	O	O	O	C	O	C	C	O	C	O	C	C	2653	2646
20	O	O	O	C	O	C	O	O	O	C	C	O	C	C	2520	2520
21	O	O	O	O	O	C	O	C	O	C	C	O	C	C	2400	2400
22	C	O	C	C	O	O	O	O	C	C	C	O	C	C	2291	2289
23	O	O	O	O	C	C	C	O	C	C	C	O	C	C	2192	2176
24	O	O	C	C	O	O	C	C	C	C	C	O	C	C	2100	2100
25	O	O	O	O	O	C	O	O	O	O	O	C	C	C	2016	2016
26	C	O	C	C	O	C	C	O	O	O	O	C	C	C	1939	1925
27	C	O	C	O	C	C	O	C	O	O	O	C	C	C	1867	1858
28	O	O	O	C	C	C	C	C	O	O	O	C	C	C	1800	1800
29	O	C	C	O	C	C	O	O	C	O	O	C	C	C	1738	1736
30	O	O	O	O	C	C	C	O	C	O	O	C	C	C	1680	1680
31	O	C	C	O	O	C	O	C	C	O	O	C	C	C	1626	1620
32	C	O	O	C	C	O	C	C	C	O	O	C	C	C	1575	1575
33	O	O	O	C	O	O	O	O	O	C	O	C	C	C	1528	1504
34	C	O	C	O	C	C	O	O	O	C	O	C	C	C	1483	1461
35	O	O	O	O	O	C	C	O	O	C	O	C	C	C	1440	1440
36	O	O	O	C	O	O	O	C	O	C	O	C	C	C	1400	1400
37	C	O	C	C	O	C	O	C	O	C	O	C	C	C	1363	1332
38	C	O	O	O	C	O	C	C	O	C	O	C	C	C	1327	1301
39	C	C	O	O	C	C	C	C	O	C	O	C	C	C	1293	1266
40	O	O	C	O	C	O	O	O	C	C	O	C	C	C	1260	1260
41	O	C	O	O	C	C	O	O	C	C	O	C	C	C	1230	1200
42	O	O	O	O	C	O	C	O	C	C	O	C	C	C	1200	1200
43	C	C	O	C	O	C	C	O	C	C	O	C	C	C	1173	1134
44	O	C	C	O	O	O	O	C	C	C	O	C	C	C	1146	1122
45	O	O	O	O	O	C	O	C	C	C	O	C	C	C	1120	1120

* C = Closed or On; O = Open or Off

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TABLE 3-24. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
46	O	O	O	C	C	C	O	C	C	C	O	C	C	C	1096	1080
47	C	C	C	C	O	O	C	C	C	C	O	C	C	C	1073	1042
48	O	C	C	O	O	C	C	C	C	C	O	C	C	C	1050	1050
49	C	C	O	C	C	C	C	C	C	C	O	C	C	C	1029	1008
50	O	O	O	O	C	O	O	O	O	O	C	C	C	C	1008	1008
51	C	C	O	O	O	C	O	O	O	O	C	C	C	C	989	950
52	O	C	C	O	C	C	O	O	O	O	C	C	C	C	970	930
53	C	O	O	C	O	O	C	O	O	O	C	C	C	C	951	948
54	O	C	O	C	C	O	C	O	O	O	C	C	C	C	934	898
55	C	C	O	C	O	C	C	O	O	O	C	C	C	C	917	882
56	O	O	C	C	C	C	C	O	O	O	C	C	C	C	900	900
57	C	C	O	C	O	O	O	C	O	O	C	C	C	C	885	840
58	C	C	O	C	C	O	O	C	O	O	C	C	C	C	869	867
59	C	O	O	C	O	C	O	C	O	O	C	C	C	C	855	810
60	O	O	O	C	C	C	O	C	O	O	C	C	C	C	840	840
61	C	O	C	O	O	O	C	C	O	O	C	C	C	C	827	780
62	C	C	O	O	C	O	C	C	O	O	C	C	C	C	813	807
63	O	O	O	O	O	C	C	C	O	O	C	C	C	C	800	800
64	O	O	C	C	O	C	C	C	O	O	C	C	C	C	788	756
65	O	O	O	C	C	C	C	C	O	O	C	C	C	C	776	736
66	O	O	C	O	O	O	O	O	C	O	C	C	C	C	764	740
67	C	C	C	C	O	O	O	O	C	O	C	C	C	C	753	702
68	O	C	O	C	C	O	O	O	C	O	C	C	C	C	742	686
69	C	O	C	O	O	C	O	O	C	O	C	C	C	C	731	692
70	O	O	O	O	C	C	O	O	C	O	C	C	C	C	720	720
71	O	C	O	C	C	C	O	O	C	O	C	C	C	C	710	700
72	O	O	C	O	O	O	C	O	C	O	C	C	C	C	700	700
73	C	O	C	C	O	O	C	O	C	O	C	C	C	C	691	648
74	O	C	C	O	C	O	C	O	C	O	C	C	C	C	682	614
75	O	O	O	O	O	C	C	O	C	O	C	C	C	C	672	672
76	O	O	O	C	O	C	C	O	C	O	C	C	C	C	664	600
77	C	O	O	O	C	C	C	O	C	O	C	C	C	C	655	620
78	C	O	O	C	C	C	C	O	C	O	C	C	C	C	647	581
79	O	C	O	O	O	O	O	C	C	O	C	C	C	C	638	636
80	O	C	O	C	O	O	O	C	C	O	C	C	C	C	630	630
81	C	O	O	O	C	O	O	C	C	O	C	C	C	C	623	560
82	C	O	O	C	C	O	O	C	C	O	C	C	C	C	615	585
83	O	O	O	O	O	C	O	C	C	O	C	C	C	C	608	544
84	O	O	O	C	O	C	O	C	C	O	C	C	C	C	600	600
85	C	C	C	C	O	C	O	C	C	O	C	C	C	C	593	588
86	C	O	C	O	C	C	O	C	C	O	C	C	C	C	587	505
87	O	O	C	C	C	C	O	C	C	O	C	C	C	C	580	520

* C = Closed or On; O = Open or Off

TABLE 3-24. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
88	C	C	O	O	O	O	C	C	C	O	C	C	C	C	573	549
89	C	O	O	C	O	O	C	C	C	O	C	C	C	C	567	504
90	O	O	O	O	C	O	C	C	C	O	C	C	C	C	560	560
91	O	C	C	O	C	O	C	C	C	O	C	C	C	C	554	540
92	O	O	C	C	C	O	C	C	C	O	C	C	C	C	548	532
93	O	C	O	O	O	C	C	C	C	O	C	C	C	C	542	536
94	C	C	C	O	O	C	C	C	C	O	C	C	C	C	537	459
95	C	O	C	C	O	C	C	C	C	O	C	C	C	C	531	486
96	C	C	O	O	C	C	C	C	C	O	C	C	C	C	525	525
97	O	O	O	C	C	C	C	C	C	O	C	C	C	C	520	480
98	C	O	C	C	C	C	C	C	C	O	C	C	C	C	515	445
99	O	C	O	O	O	O	O	O	O	C	C	C	C	C	510	420
100	O	O	O	C	O	O	O	O	O	C	C	C	C	C	504	504
101	O	O	C	C	O	O	O	O	O	C	C	C	C	C	500	400
102	C	O	O	O	C	O	O	O	O	C	C	C	C	C	495	405
103	O	C	C	O	C	O	O	O	O	C	C	C	C	C	490	420
104	C	C	O	C	C	O	O	O	O	C	C	C	C	C	485	445
105	O	O	O	O	O	C	O	O	O	C	C	C	C	C	480	480
106	O	O	C	O	O	C	O	O	O	C	C	C	C	C	476	420
107	O	O	O	C	O	C	O	O	O	C	C	C	C	C	472	368
108	C	O	C	C	O	C	O	O	O	C	C	C	C	C	467	431
109	C	O	O	O	C	C	O	O	O	C	C	C	C	C	463	396
110	C	O	C	O	C	C	O	O	O	C	C	C	C	C	459	369
111	C	O	O	C	C	C	O	O	O	C	C	C	C	C	455	350
112	O	C	C	C	C	C	O	O	O	C	C	C	C	C	450	450
113	C	O	O	O	O	O	C	O	O	C	C	C	C	C	447	336
114	C	O	C	O	O	O	C	O	O	C	C	C	C	C	443	341
115	C	O	O	C	O	O	C	O	O	C	C	C	C	C	439	354
116	C	O	C	C	O	O	C	O	O	C	C	C	C	C	435	375
117	C	O	O	O	C	O	C	O	O	C	C	C	C	C	431	404
118	O	O	C	O	C	O	C	O	O	C	C	C	C	C	428	324
119	O	O	O	C	C	O	C	O	O	C	C	C	C	C	424	368
120	O	O	C	C	C	O	C	O	O	C	C	C	C	C	420	420
121	C	C	C	C	C	O	C	O	O	C	C	C	C	C	417	360
122	O	C	O	O	O	C	C	O	O	C	C	C	C	C	414	306
123	O	C	C	O	O	C	C	O	O	C	C	C	C	C	410	380
124	C	O	O	C	O	C	C	O	O	C	C	C	C	C	407	339
125	O	O	C	C	O	C	C	O	O	C	C	C	C	C	404	304
126	O	O	O	O	C	C	C	O	O	C	C	C	C	C	400	400
127	C	C	O	O	C	C	C	O	O	C	C	C	C	C	397	378
128	O	C	C	O	C	C	C	O	O	C	C	C	C	C	394	362
129	C	O	O	C	C	C	C	O	O	C	C	C	C	C	391	352

* C = Closed or On; O = Open or Off

—————— Continued ——————

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TABLE 3-24. SECTOR SELECT SWITCH SETTINGS -- 1230 MB DRIVES
USING 3.024 MHz (BYTE) CLOCK AND ROUND-UP METHOD (Contd)

Number of Sectors	Sector Switches*														Bytes in Early Sectors	Bytes in Last Sector
	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}	2^{11}	2^{12}	2^{13}		
130	O	O	C	C	C	C	C	O	O	C	C	C	C	C	388	348
131	C	C	C	C	C	C	C	O	O	C	C	C	C	C	385	350
132	O	C	O	O	O	O	O	C	O	C	C	C	C	C	382	358
133	C	O	C	O	O	O	O	C	O	C	C	C	C	C	379	372
134	C	C	C	O	O	O	O	C	O	C	C	C	C	C	377	259
135	O	C	O	C	O	O	O	C	O	C	C	C	C	C	374	284
136	C	O	C	C	O	O	O	C	O	C	C	C	C	C	371	315
137	O	O	O	O	C	O	O	C	O	C	C	C	C	C	368	352
138	O	C	O	O	C	O	O	C	O	C	C	C	C	C	366	258
139	C	O	C	O	C	O	O	C	O	C	C	C	C	C	363	306
140	O	O	O	C	C	O	O	C	O	C	C	C	C	C	360	360
141	O	C	O	C	C	O	O	C	O	C	C	C	C	C	358	280
142	C	O	C	C	C	O	O	C	O	C	C	C	C	C	355	345
143	C	C	C	C	C	O	O	C	O	C	C	C	C	C	353	274
144	O	C	O	O	O	C	O	C	O	C	C	C	C	C	350	350
145	O	O	C	O	O	C	O	C	O	C	C	C	C	C	348	288
146	O	C	C	O	O	C	O	C	O	C	C	C	C	C	346	230
147	C	O	O	C	O	C	O	C	O	C	C	C	C	C	343	322
148	C	C	O	C	O	C	O	C	O	C	C	C	C	C	341	273
149	C	O	C	C	O	C	O	C	O	C	C	C	C	C	339	228
150	O	O	O	O	C	C	O	C	O	C	C	C	C	C	336	336
151	O	C	O	O	C	C	O	C	O	C	C	C	C	C	334	300
152	O	O	C	O	C	C	O	C	O	C	C	C	C	C	332	268
153	O	C	C	O	C	C	O	C	O	C	C	C	C	C	330	240
154	O	O	O	C	C	C	O	C	O	C	C	C	C	C	328	216
155	O	C	O	C	C	C	O	C	O	C	C	C	C	C	326	196
156	O	O	C	C	C	C	O	C	O	C	C	C	C	C	324	180
157	O	C	C	C	C	C	O	C	O	C	C	C	C	C	322	168
158	C	O	O	O	O	O	C	C	O	C	C	C	C	C	319	317
159	C	C	O	O	O	O	C	C	O	C	C	C	C	C	317	314
160	C	O	C	O	O	O	C	C	O	C	C	C	C	C	315	315
161	O	C	C	O	O	O	C	C	O	C	C	C	C	C	314	160
162	O	O	O	C	O	O	C	C	O	C	C	C	C	C	312	168
163	O	C	O	C	O	O	C	C	O	C	C	C	C	C	310	180
164	O	O	C	C	O	O	C	C	O	C	C	C	C	C	308	196
165	O	C	C	C	O	O	C	C	O	C	C	C	C	C	306	216
166	O	O	O	O	C	O	C	C	O	C	C	C	C	C	304	240
167	O	C	O	O	C	O	C	C	O	C	C	C	C	C	302	268
168	O	O	C	O	C	O	C	C	O	C	C	C	C	C	300	300

* C = Closed or On; O = Open or Off

CHECKOUT

After completing installation of the drive, follow the sequence
outlined below for initial startup in either remote or local.
Refer to section 2 of this manual for information about
operation of the drive.

CHECKOUT IN REMOTE MODE

1. Set On/Standby switch at rear of power supply in On (1)
    position, and observe that power supply cooling fan
    operates.

2. Set drive logical address. Logical address for each drive
    in a system must have a unique number.

3. Press START switch on drives with operator panel or
    status/control panel.

    The power on sequence continues when power sequence Pick
    or Hold (ground) signal is available from controller.
    With R/L (Remote/Local) switch in Remote position, power
    on sequence to each drive is delayed. Length of delay is
    determined by the logical address number used, in
    increments of 5 seconds.

    For example:
    Logical Address 0 = 0 second delay
    Logical Address 7 = 35 second delay

4. If drive has an operator panel or a status/control panel,
    observe (with delay complete) that the Ready indicator
    (located in START switch) flashes rapidly, indicating that
    power on is in progress.

5. Observe that Ready indicator on operator panel or
    status/control panel lights steadily within 90 seconds.
    This indicates that drive motor is up to speed and that
    heads are at track 0. If drive has no operator panel or
    status/control panel, observe that RDY Maintenance LED (on
    control board) lights to indicate that drive is ready.

If all of these events occurred, the drive is now ready for
online operation. If any did not occur, a problem exists in the
drive. Then refer to troubleshooting information either in
appendix A of this manual or in the maintenance manual.

CHECKOUT IN LOCAL MODE

NOTE

For drives without operator panel or
status/control panel, power on sequence begins
when the power supply On/Standby switch is
placed in On (1) position.

1. Set On/Standby switch at rear of power supply in On (1)
   position, and observe that power supply cooling fan
   operates.

2. Set drive logical address. Logical address for each
   drive in a system must have a unique number.

3. Press START switch on drives with operator panel or
   status/control panel.

4. If drive has an operator panel or a status/control panel,
   observe that Ready indicator (located in START switch)
   flashes rapidly, indicating that power on is in progress.

5. Observe that Ready indicator on operator panel or
   status/control panel lights steadily within 90 seconds.
   This indicates that drive motor is up to speed and that
   heads are at track 0. If drive has no operator panel or
   status/control panel, observe that RDY Maintenance LED
   (on control board) lights to indicate that drive is ready.

If all of these events occurred, the drive is now ready for
online operation. If any did not occur, a problem exists in
the drive. Then refer to troubleshooting information either in
appendix A of this manual or in the maintenance manual.

APPENDIX A

DIAGNOSTIC TESTING AND STATUS CODE SUMMARY

CAUTION

When servicing the drive, observe all precautions listed under Electrostatic Discharge Protection in section 3 of this manual. Failure to observe these precautions can result in serious damage to electronic assemblies.

INTRODUCTION

This appendix presents information on interpreting the information displayed on the status/control panel and running offline diagnostic tests. More complete troubleshooting information can be found in the maintenance manual. You should be familiar with the contents of that manual before doing any troubleshooting.

For trouble analysis, a status/control panel is needed. If the drive installation does not include a status/control panel, we advise that you connect one to the drive during troubleshooting. Refer in the parts data manual for part numbers of the status/control panel and its interconnect cable. Refer to section 3 of this manual for instructions on connecting the panel to the drive.

The following types of troubleshooting information are presented in this appendix:

- Power On Test -- Describes drive self tests that occur when dc power is applied to the drive

- Diagnostic Testing -- Describes how to use diagnostic testing to isolate drive malfunctions

- Drive Status Codes -- Provides information on correcting problems associated with drive power on/power off and with servo operation

POWER ON TEST

When dc power is applied to the drive, the Control MPU performs
a series of self-tests. During these tests the Address, Ready,
FAULT, and WRITE PROTECT lights on the operator panel or
status/control panel will be lit. After approximately four
seconds, the FAULT light will go off, indicating successful
completion of the self-tests. If the Ready and FAULT lights
remain on constantly, it indicates the drive failed the power
on self-test. The Address lights will then indicate which
self-test routine the drive failed to complete. Refer to table
A-1 to determine the test that failed and what action to take.

In addition to the individual tests listed in table A-1, the
Control MPU attempts to communicate with the status/control
panel. If this communication is unsuccessful, the Control MPU
displays the message PANEL FAILURE on the LCD of the panel.

TABLE A-1.   POWER ON TEST FAILURE

Address Lights*				Hex Code	Test Failed** & Actions
8	4	2	1		
●	●	●	●	F	**RAM Test** Action: 1. Replace control board.
●	●	●	○	E	**ROM Test** Action: 1. Replace control board.
●	●	○	●	D	**I/O Chip Test** Actions: 1. Replace I/O board. 2. Replace control board.
●	●	○	○	C	**Peripheral Chip (Test 1)** Action: 1. Replace control board.
●	○	●	●	B	**Peripheral Chip (Test 2)** Action: 1. Replace control board.
●	○	●	○	A	**Motor MPU Test** Action: 1. Replace control board.

* Darkened circles indicate light is On.

**Ready and FAULT lights remain on constantly, indicating
  drive failed four second power on self test.

DIAGNOSTIC TESTING

The drive's offline diagnostics are initiated and monitored via the keyboard and LCD of the status/control panel. Figure A-1 shows the placement of switches and indicators on both the status/control panel and the operator panel. Table A-2 describes the maintenance features of the status/control panel.

TEST SELECTION PROCEDURE

To run offline diagnostic tests on the drive, place the drive in diagnostic mode and select the tests desired. To do this:

- Press the DIAG MODE switch to enter diagnostic mode and observe that the LCD reads DIAG TEST XX.

- Enter two hexadecimal characters on the keyboard and press EXEC switch to select the first test.

Directions for running the individual diagnostic tests appear later in this section. When the EXEC switch is pressed one more time, the test ends and the LCD again reads DIAG TEST XX. At this point you have two choices:

- Enter two hexadecimal characters on the keyboard and press EXEC switch to select another test, or

- Press the DIAG MODE switch to leave diagnostic mode and observe that the LCD displays drive operating status.

TABLE A-2. MAINTENANCE SWITCHES AND INDICATORS

Switch or Indicator	Function
STATUS/CONTROL PANEL ONLY	
Diagnostic Keyboard	Used to enter diagnostic tests and parameters.
Liquid Crystal Display	Displays drive status, faults, and current cylinder address.
DIAG MODE (Diagnostic Mode) Switch	Places drive in diagnostic mode and disables the I/O.
SPACE and BACK SPACE Switches	Used to enter the desired diagnostic tests.
EXEC (Execute) Switch	Starts and stops diagnostic tests.
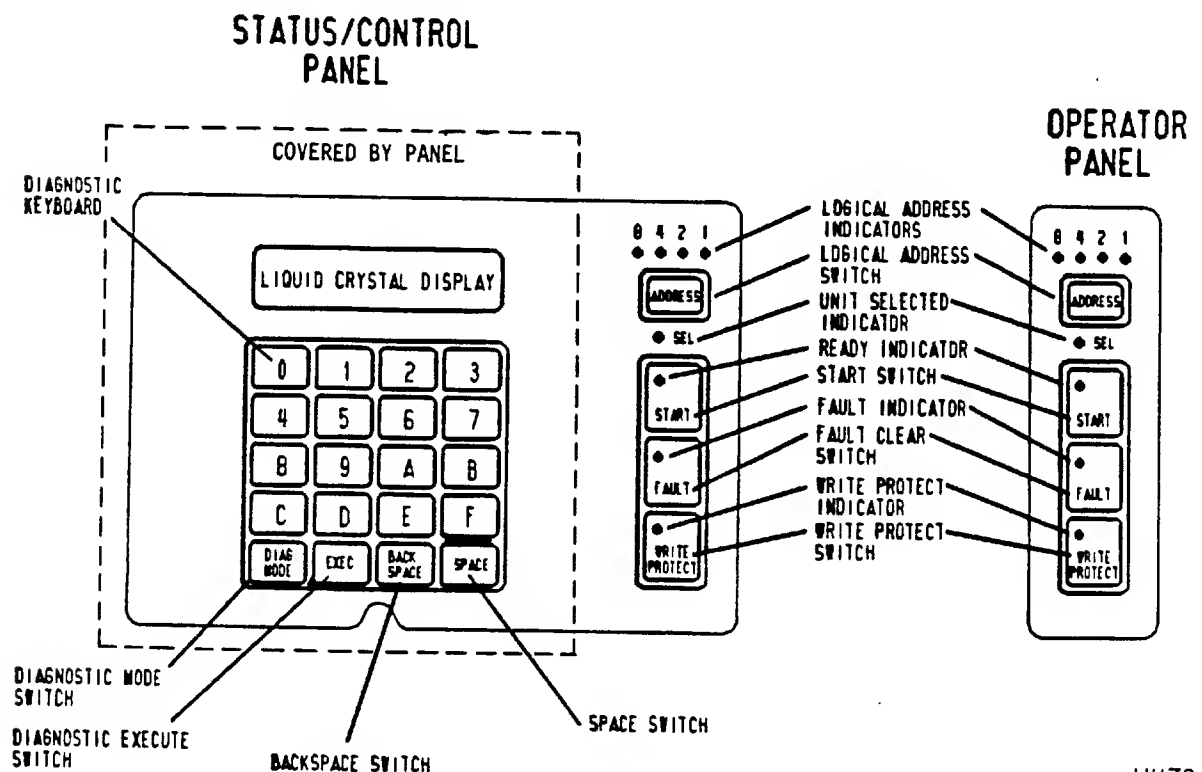
Figure A-1. Status/Control and Operator Panels

TEST DESCRIPTIONS

Test 00 -- Display Drive Operating Status Log

This test displays the 8 most recently generated drive status codes. After test selection, the display provides a hexadecimal status code from the internal log. This code is preceded by a character (0-7) and a colon, indicating the position of the status code in the status log. To execute test 00, perform the following steps:

1. Enter Test 00, then press EXEC switch. The LCD will display DRIVE LOG: 0:XX where the number 0 indicates the position in the log and XX represents the status code entered in that position.

2. Press SPACE switch repeatedly until you see a code preceded by an asterisk (for example, DRIVE LOG: *5:XX). The asterisk identifies that code as the most recent entry in the status log.

3. Use the SPACE switch to step through from the 8th most recent to the most recent status.

4. Press EXEC switch to end the test and return to test selection.

Test 01 -- Display Fault Log

This test displays the 8 most recently stored fault codes. After test selection, a hexadecimal fault code will be displayed. This code is preceded by a character (0-7) and a colon, indicating the position of the fault code in the fault log. To execute test 01, perform the following steps:

1. Enter Test 01, then press EXEC switch. The LCD will display FAULT LOG: 0:XX where the number 0 indicates the position in the log and XX represents the fault code entered in that position.

2. Press SPACE switch repeatedly until you see a code preceded by an asterisk (for example, FAULT LOG: *5:XX). The asterisk identifies that code as the most recent entry in the fault log.

3. Use the SPACE switch to step through from the 8th most recent to the most recent fault.

4. If more than one fault occurs simultaneously (multiple faults), more than one bit in the fault code will be set. Check the bit-mapped locations of each fault by referring to the following list:

Bit		Definition
0	(LSB)	Read•Write Fault (01)
1		(Read+Write)•Off Cylinder Fault (02)
2		First Seek Fault (04)
3		Write Fault (08)
4		Write•Write Protected Fault (10)
5		Head Select Fault (20)
6		Voltage Fault (40)
7	(MSB)	Not Used (80)

5. Press EXEC switch to end the test and return to test selection.

Test 04 -- Calculate Three Most Likely Field Replaceable Units

NOTE

Do not execute Tests 05, 06, or 07 prior to running Test 04.

This test uses the fault status and the drive operating status history (Tests 00 and 01) to predict the most likely cause of drive failure. Table A-3 lists the individual codes and their corresponding replacement part. To execute Test 04, perform the following steps:

1. Enter Test 04, then press EXEC switch. The LCD will display FRUS: XX XX XX. Upon test completion, the three field replaceable units will be displayed, with the first hexadecimal code being the most likely cause of the failure.

2. Press EXEC switch to end the test and return to test selection.

TABLE A-3. CODING OF FIELD REPLACEABLE UNITS

Hex Display	Field Replaceable Unit
01	Control Board
02	Module
03	Power Supply
04	I/O Board
05	Control Board
06	Module

Test 05 -- Servo Test

This test clears both the drive status log and fault log.
Because Test 04 relies on status history that would be cleared
by Test 05, you might want to run Test 04 before running Test
05. Test 05 automatically performs several types of seek
operations. They are as follows:

Operation	Number Of Times Executed
RTZ	1
1 Track Seek	16
RTZ	1
Partial Servo Recalibrate	1
RTZ	1
Maximum Length Seek	16
RTZ	1

Execution stops when an error is detected or the test
completes. To execute Test 05, perform the following steps:

1. Enter Test 05, then press EXEC switch. Upon successful completion of the test, the LCD will display OK, CYL: 000. If an error occurs, the LCD will display SERVO ERROR: XX. Drive status codes (servo errors) are defined in table A-4 later in this section.

2. Press EXEC switch to end the test and return to test selection.

Test 06 -- Clear Drive Operating Status Log

This test clears the drive status log resident in program RAM. Because Test 04 relies on status history that would be cleared by Test 06, you might want to run Test 04 before running Test 06. To execute Test 06, perform the following steps:

1. Enter Test 06 and press EXEC switch. The LCD will display DRIVE LOG CLEAR.

2. Press EXEC switch to end the test and return to test selection.

Test 07 -- Clear Fault Log

This test clears the fault log. Because Test 04 relies on status history that would be cleared by Test 07, you might want to run Test 04 before running Test 07. To execute Test 07, perform the following steps:

1. Enter Test 07 and press EXEC switch. The LCD will display FAULT LOG CLEAR.

2. Press EXEC switch to end the test and return to test selection.

Test 08 -- Direct Or Continuous Seeks

This test performs direct or continuous seeks between cylinder 0 and the desired cylinder address. Operation stops if an error occurs or if the EXEC switch is pressed. To execute Test 08, perform the following steps:

1. Enter Test 08 and press EXEC switch.

2. The display HEX CYL XXX asks you to supply a valid destination address (between 0 and 662 inclusive on 736 MB, 1120 MB, and 1230 MB drives; between 0 and 564 on 850 MB drives). Enter <u>three</u> characters and press SPACE switch.

3. The display DIR OR CONT? D/C asks you to select either DIRect (D) or CONTinuous (C) seeks. Enter either C or D to start test.

4. If D was entered and the direct seek was successful, the LCD will display OK, CYL: XXX, where XXX is the destination address previously entered. Press EXEC switch to end the test and return to test selection.

5. If either D or C was entered and an error occurs, the LCD will display SERVO ERROR: XX. Drive status codes (servo errors) are defined in table A-4 later in this section. By running Test 05 or Test 0E, you can clear the seek error.

6. If C was entered, press EXEC switch to end the test and return to test selection.

Test 09 -- Random Seek

This test performs random seeks between cylinder 0 and the maximum cylinder address (0-1634 on 736 MB, 1120 MB, and 1230 MB drives; 0-1380 on 850 MB drives). Operation stops if an error occurs or if the EXEC switch is pressed. To execute Test 09, perform the following steps:

1. Enter Test 09 and press EXEC switch.

2. The LCD will display OK, CYL: XXX if execution was successful.

3. If an error occurs during the test, the LCD will display SERVO ERROR: XX. Drive status codes (servo errors) are defined in table A-4 later in this section.

4. Press EXEC switch to end the test and return to test selection.

Test 0C -- Display EPROM Part Number

This test displays the 8-digit part number of the control microprocessor EPROM. To execute Test 0C, perform the following steps:

1. Enter Test 0C and press EXEC switch. The LCD will display the 8-digit part number of the EPROM (for example, EPROM# = 12345678).

2. Press EXEC switch to end the test and return to test selection.

Test OE -- Return To Zero

This test initiates a return to zero command. To execute Test OE, perform the following steps:

1. Enter Test OE and press EXEC switch. The LCD will display OK, CYL: 000.

2. If an error occurs during the test, the LCD will display SERVO ERROR: XX. Drive status codes (servo errors) are defined in table A-4 later in this section.

3. Press EXEC switch to end the test and return to test selection.

DRIVE STATUS CODES

Whenever the drive is in a power on condition (dc power active), the Control MPU is periodically checking the operation of the drive and generating appropriate operating status codes.

Table A-4 lists the status codes and a definition of each code. If a drive malfunction occurs, observe the error code and perform Diagnostic Test 04 to calculate the action to be taken.

Figure A-2 shows an example of the LCD during normal operation and when a fault occurs. During normal operation, the LCD displays current drive status, current cylinder address, and which drive channel is selected and/or reserved.

If a fault occurs, the LCD displays the type of fault(s) that occurred along with the current drive status. If more than one fault occurred, use the SPACE switch to step through the fault log to determine what faults are present.

Pressing the Fault Clear switch on the status/control panel clears the LCD fault display and the FAULT indicator, provided that the fault condition is no longer present. However, a Fault Clear signal from the controller clears only the FAULT indicator.

NORMAL OPERATION

```
┌─────────────────────────┐
│  DRIVE STATUS:  0 0      │
│                          │
│  CYL: 0 0 0    S:1 R:1   │
└─────────────────────────┘
```

CURRENT DRIVE
CYLINDER ADDRESS

INDICATES WHICH CHANNEL
IS SELECTED AND/OR
RESERVED

INDICATES CURRENT
DRIVE STATUS

FAULT CONDITION

```
┌─────────────────────────┐
│  DRIVE STATUS:  0 0      │
│                          │
│  FAULT(S)    RD•WRT      │
└─────────────────────────┘
```

INDICATES TYPE OF
FAULT THAT OCCURRED

INDICATES THAT MORE THAN ONE
FAULT OCCURRED. STEP THROUGH
FAULT LOG, USING SPACE SWITCH.

11F49
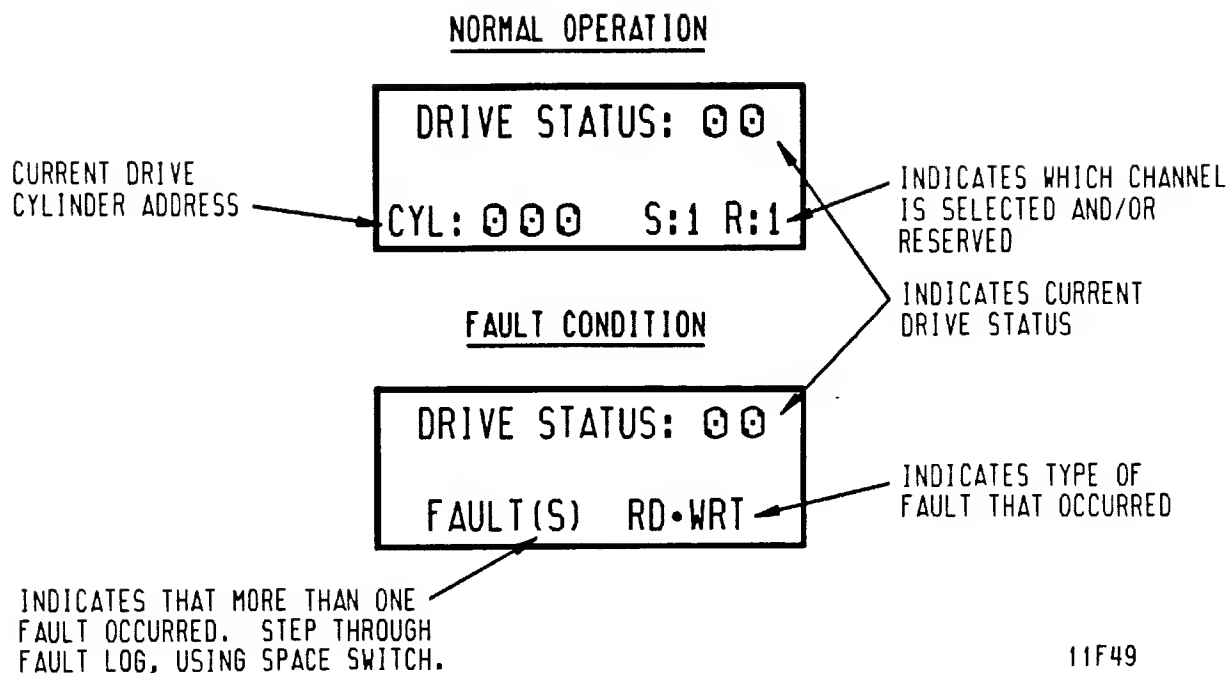
Figure A-2.   Example of LCD (Liquid Crystal Display)

TABLE A-4.   DRIVE STATUS CODES

Code	Title	Description
Normal Start/Stop Status		
00	Ready & On Cylinder	Indicates that the drive is on cylinder and ready to perform normal operations.
02	Motor Stopping	Indicates that the motor is coasting down or that motor braking is in progress.
03	Motor Stopped	Indicates that the motor is stopped.
Table Continued on Next Page		

TABLE A-4. DRIVE STATUS CODES (Contd)

Code	Title	Description
Normal Start/Stop Status (Contd)		
04	First Load/Calibrate	Indicates that the heads are moving from the landing zone to track 0 and servo calibration is being performed.
05	Sequence Delay	Indicates, in Remote mode, that a power sequence delay is occurring. The delay depends on the drive's unit address.
06	START Switch Pressed and Waiting for Power Sequence Signals	Indicates, in Remote mode, that the START switch was pressed and that the drive is waiting for power sequence signals from the controller before starting the sequence delay.
07	Starting Motor	Indicates that start conditions are present and that the spindle motor is starting.
08	Motor Up To Speed	Indicates that the spindle motor has reached full speed.
SWEEP CYCLE STATUS		
0A	Drive in Sweep Segment	The drive is executing a series of seeks for a sweep cycle. On Cylinder and Seek End are inactive at this time.
0B	Heads Left on Last Cylinder of Sweep	Current head position determined by last sweep cycle -- not by a controller-requested seek. On Cylinder and Seek End are inactive at this time.
Table Continued on Next Page		

TABLE A-4.   DRIVE STATUS CODES (Contd)

Code	Title	Description
Seek Error Status		
46	Seek Timeout	Indicates that during a normal seek the drive took longer than 100 milliseconds to reach on cylinder.
4B	Off Track Seek Error	Indicates that either the drive failed to stay on cylinder or cylinder pulses were detected during track-following.
4D	Illegal Cylinder Address	Indicates that during a normal seek, the controller issued too high a cylinder address (>1634 for 736 MB, 1120 MB, and 1230 MB drives; >1380 for 850 MB drives).
4F	Seek Error On Settle In	Indicates that the drive could not settle in on the destination cylinder.
First Seek Fault Status		
54	First Seek Fault On Retract	Indicates that the drive failed to complete the retract portion of the first seek.
55	First Seek Fault On Load	Indicates that the drive failed to load the heads.
56	First Seek Fault On RTZ	Indicates that the drive failed to complete the return to zero (RTZ) portion of the first seek.
57	First Seek Fault On Calibrate	Indicates that the drive did not complete the velocity calibration operation.
Table Continued on Next Page		

TABLE A-4. DRIVE STATUS CODES (Contd)

Code	Title	Description
		Error Condition Status
58	Speed Loss	Indicates that the spindle speed fell below 3564 r/min. When this happens, the drive activates the Write Protect line, drops the Ready signal, and performs a retract operation.
59	Motor Can't Start Due to Error	Indicates a problem in the motor control circuitry.
5A	Emergency Retract	Indicates that the heads moved to the landing zone due to a power loss (-Low Vcc active), or that a servo-controlled retract failed.
		Motor and Servo MPU Errors
60	Motor MPU Failure	Indicates that the Control MPU was unable to communicate with the Motor MPU.
61	Servo MPU Failure	Indicates that the Control MPU was unable to communicate with the Servo MPU.

APPENDIX B

REFERENCE MATERIAL FOR SECTOR SELECTION

INTRODUCTION

The information in this appendix supplements the instructions for sector selection given in section 3. The appendix is divided into two parts -- one part applying to Type 1 control boards and the other part applying to Type 2 and 3 control boards. To determine the type of control board in your drive, examine the arrangement of DIP switches on the board. By uncovering slots in the drive top cover, you can see the DIP switches. The following picture shows both older and newer boards:

Type 1 control boards have 3 groups of switches with 6 switches in each group. Type 1 boards were used on early 736 and 850 MB drives only.

For Type 1 boards, all instructions on setting sector switches appear in this appendix.

Type 2 and Type 3 control boards have 2 groups of switches, with 10 switches in each group. The main difference between Type 2 and Type 3 boards is the location and function of jumpers that select certain features.

For Type 2 and Type 3 boards, section 3 provides basic instructions for sector selection. This appendix supplements the information in section 3.
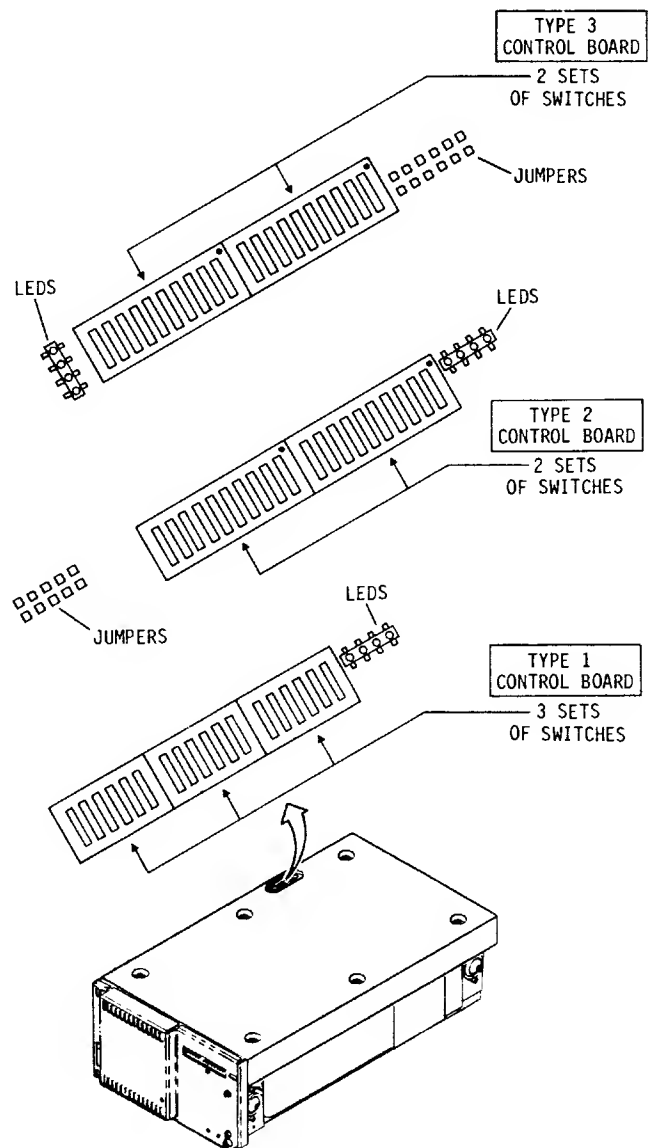
REFERENCE MATERIAL FOR TYPE 1 CONTROL BOARDS

This topic describes how to set the sector switches on Type 1 control boards (shown in figure B-1). Refer to the subsystem or controller reference manual to determine the number of sectors (or the bytes/sector) required by the controller. To achieve that requirement, the following settings are required:

- Sector switches

- Sector Clock switch (.8/1.6)
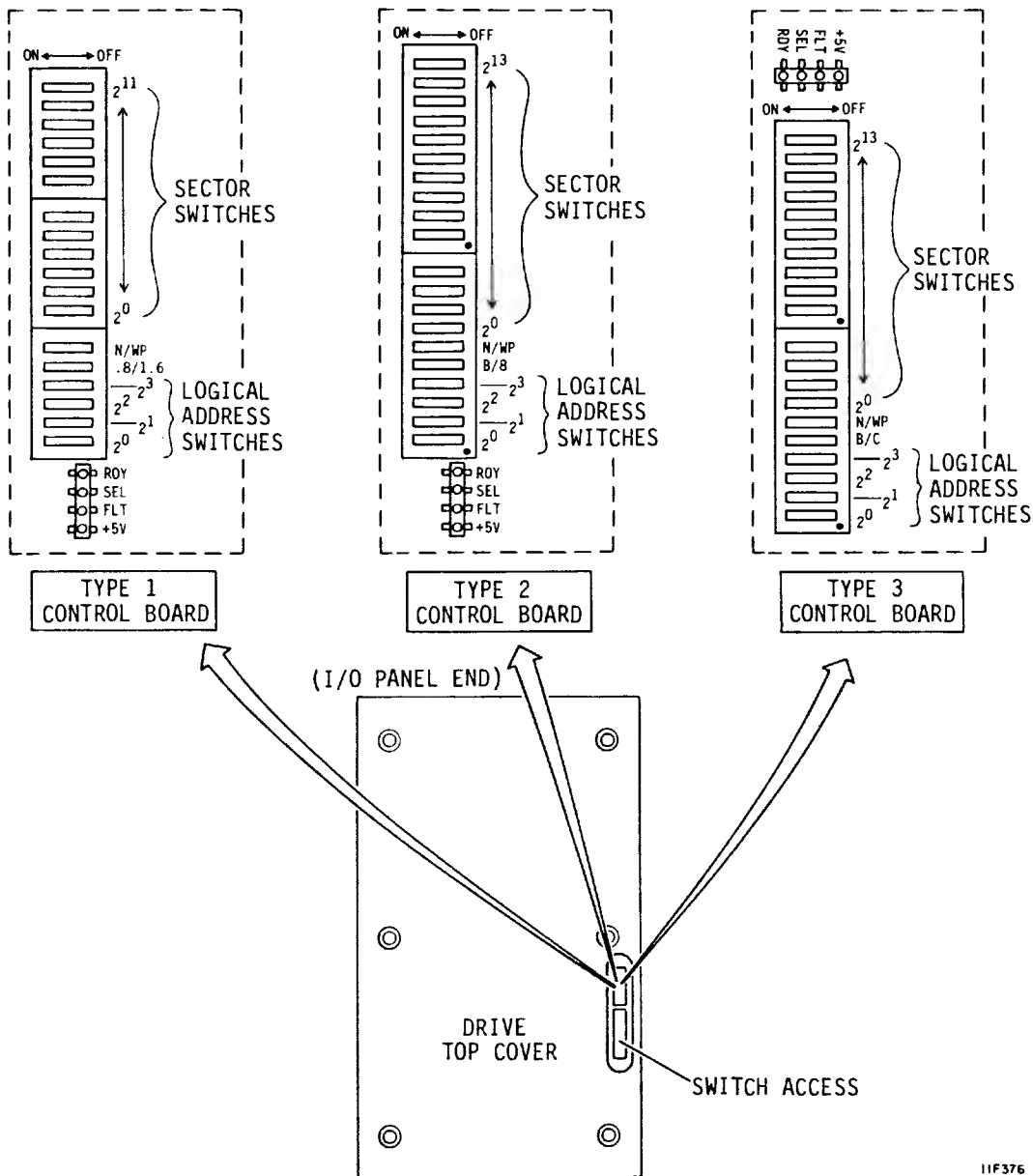
Figure B-1. Sector Switch Locations

The information for Type 1 control boards is organized as follows:

- What the Sector Switches Do

- How to Set Desired Numbers of Sectors

- How to Set Desired Sector Lengths

- How to Calculate Sector Lengths

WHAT THE SECTOR SWITCHES DO

The sector switches supply a preset count to the sector counter circuit. This circuit counts sector clock pulses, starting at the preset value when index appears and after each new sector pulse is issued. When the sector counter has received a specific number of clock pulses, it issues another sector pulse and begins at the preset value to count again. A switch selection determines whether the sector clock frequency is 0.8 MHz or 1.6 MHz.

Two numbers enter into all of the calculations presented here. They are the number of sector clock pulses per disk rotation and the number of bytes per track. Table B-1 summarizes these numbers.

TABLE B-1.   SECTOR CALCULATION DATA FOR TYPE 1 BOARDS

Characteristics	736 MB Drives	850 MB Drives
Bytes per track	30 240	41 088
Sector clock pulses per disk rotation		
.8/1.6 switch set at .8	13 440	13 696
.8/1.6 switch set at 1.6	26 880	27 392
Bytes per sector clock pulse		
.8/1.6 switch set at .8	2.25	3
.8/1.6 switch set at 1.6	1.125	1.5
Sector length adjustment (bytes)		
.8/1.6 switch set at .8	2.25	3
.8/1.6 switch set at 1.6	4.00	5.25

The individual sector switches are identified by their binary values. Each sector switch represents a binary and decimal value of clock pulses (as counted in the logic). The values related to each switch are as follows:

Binary Value	Decimal Value
2^0	1
2^1	2
2^2	4
2^3	8
2^4	16
2^5	32
2^6	64
2^7	128
2^8	256
2^9	512
2^{10}	1024
2^{11}	2048

HOW TO SET DESIRED NUMBERS OF SECTORS

This topic describes the process used for calculating sector switch settings and provides an example of the calculation. The process makes use of numbers given in table B-1. Here are the steps required:

1. Calculate the number of selected clock pulses per sector. Use the following formula:

    $$\text{Selected Clock Pulses} = \frac{\text{Sector Clock Pulses/Rotation}}{\text{Number of Sectors Desired}} - 1$$

2. If the result in step 1 is not an integer, either round it up or round it down. (The number 313.6, for example, can be rounded up to 314 or can be rounded down to 313.) Figure B-2 shows the effects of using the round-up and round-down methods, and section 3 contains some discussion of the two methods.

3. Express the result of step 2 as a sum of individual sector switch values (shown above). When a switch value appears in the sum, that switch must be placed in the Closed (On) position.

NOTES:

⚠️ WITH ROUND-UP METHOD, LAST SECTOR MAY
BE SHORTER THAN EARLY SECTORS.
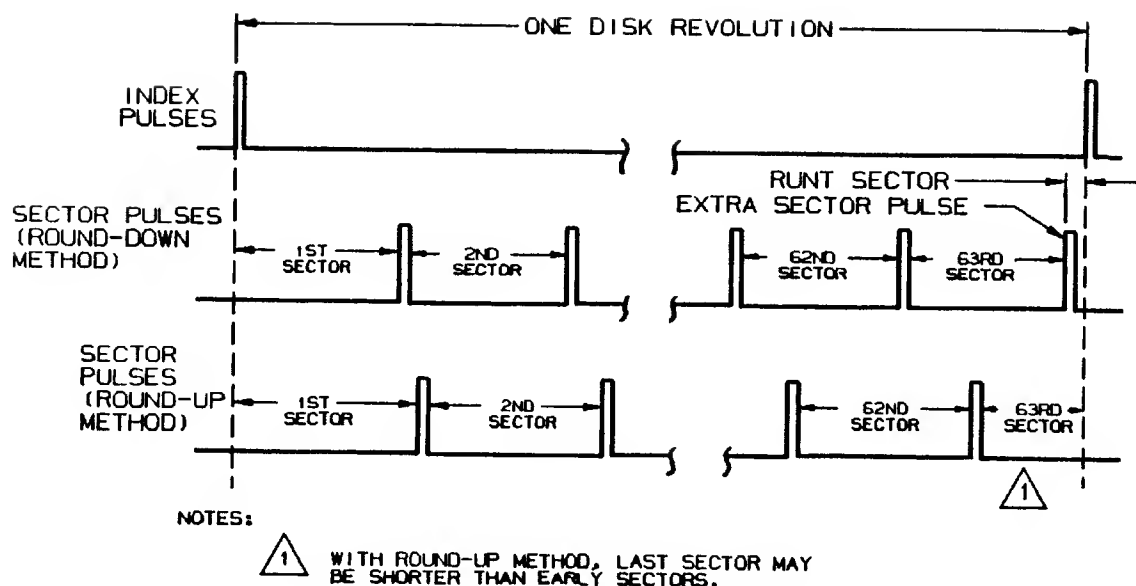
11F213

Figure B-2.   Round-up and Round-down Methods (Type 1)

Here is an example of determining the switch settings for
selecting 63 sectors on a 736 MB drive, using the 0.8 MHz
Sector Clock and the round-down method:

1.   Selected Clock Pulses $= (\frac{13\ 440}{63} - 1) = (213.33 - 1)$

$$= 212.33$$

2.   For the round-down method, this result becomes 212.   (For
the round-up method, it would be 213.)

3.   Determine which switches to place in the Closed (On)
position as follows:

Selected clock pulses	212
Clock pulses selected by switch 2^7	$-\underline{128}$
(Difference)	84
Clock pulses selected by switch 2^6	$-\underline{64}$
(Difference)	20
Clock pulses selected by switch 2^4	$-\underline{16}$
(Difference)	4
Clock pulses selected by switch 2^2	$-\underline{4}$
(Difference)	0

Thus, placing switches 2^2, 2^4, 2^6, and 2^7 in the Closed
(On) position selects 63 sectors. Since a remainder existed in
the formula and was rounded down, an additional sector pulse
will appear just before index.

Refer to How to Calculate Sector Lengths (later in this
section) for information on finding the number of bytes in the
usable sectors and in the last sector.

For future reference, you may want to record the switch
settings you made. Use the following worksheet:

```
   Number of Sectors: _____

   Switch Settings:
     2^0 ___      2^1 ___      2^2 ___      2^3 ___
     2^4 ___      2^5 ___      2^6 ___      2^7 ___
     2^8 ___      2^9 ___      2^10 ___     2^11 ___
   .8/1.6 Switch: _____
 Sector Length: _____ bytes
```

HOW TO SET DESIRED SECTOR LENGTHS

This topic describes the process used for calculating sector
switch settings for a desired sector length. It also provides
an example of the calculation.

With this method, there is no attempt to divide the disk
rotation into nearly equal segments. Instead, the method
starts with a known sector length (data field plus overhead,
expressed in bytes). The process makes use of numbers given in
table B-1. Here are the steps required:

1. Calculate the number of selected clock pulses per
   sector. Use the following formula:

   $$\text{Selected Clock Pulses} = \frac{\text{Sector Length in Bytes}}{\text{Bytes per Sector Clock Pulse}} - 1$$

2. If the result in step 1 is not an integer, round it up.
   (The number 313.6, for example, would be rounded up to
   314.)

3. Express the result of step 2 as a sum of individual
   sector switch values (see page B-4). When a switch value
   appears in the sum, that switch must be placed in the
   Closed (On) position.

Here is an example of determining the switch settings for selecting 572-byte sectors (512-byte data field plus 60 bytes of overhead) on an 850 MB drive, using the 1.6 MHz Sector Clock:

1. Selected Clock Pulses = $(\frac{572}{1.5} - 1)$ = (381.3 - 1) = 380.3

2. Because this is not an integer, round it up to 381.

3. Determine which switches to place in the Closed (On) position as follows:

Selected clock pulses	381
Clock pulses selected by switch 2^8	-256
(Difference)	125
Clock pulses selected by switch 2^6	- 64
(Difference)	61
Clock pulses selected by switch 2^5	-32
(Difference)	29
Clock pulses selected by switch 2^4	-16
(Difference)	13
Clock pulses selected by switch 2^3	-8
(Difference)	5
Clock pulses selected by switch 2^2	-4
(Difference)	1
Clock pulses selected by switch 2^0	-1
(Difference)	0

Thus, placing switches 2^0, 2^2, 2^3, 2^4, 2^5, 2^6, and 2^8 in the Closed (On) position selects the sectors with the required length.

Refer to How to Calculate Sector Lengths (later in this section) for information on finding the number of bytes in the usable sectors and in the last sector.

For future reference, you may want to record the switch settings you made. Use the following worksheet:

Sector Length: _____ bytes

Switch Settings:
2^0 ____ 2^1 ____ 2^2 ____ 2^3 ____
2^4 ____ 2^5 ____ 2^6 ____ 2^7 ____
2^8 ____ 2^9 ____ 2^{10} ____ 2^{11} ____
.8/1.6 Switch: _____

HOW TO CALCULATE SECTOR LENGTHS

This method for calculating sector lengths uses the actual
sector switch settings as a starting point. It works for any
combination of switch settings regardless of how they were
derived. This topic describes the process involved and
provides an example of how to do the calculation.

1. Examine the sector switches and note which ones are in
    the Closed (On) position. Also note the position of the
    .8/1.6 switch.

2. For each sector switch noted in step 1, write down its
    decimal value given on page B-4.

3. Add the numbers accumulated in step 2. If you used the
    calculation formula in either of the preceding topics to
    obtain the sector switch settings, take note. The sum in
    this step is the same number derived in step 2 of those
    topics.

4. Add 1 to the result in step 3 to obtain the length of a
    sector expressed in sector clock pulses.

5. Multiply the result in step 4 by the number of bytes per
    sector clock pulse (given in table B-1) to obtain the
    number of bytes per sector.

Here is an example of determining the sector length for a
736 MB drive:

1. You observe that the following switches are in the Closed
    (On) position: 2^0, 2^1, 2^2, 2^4, 2^5, and 2^7.
    The .8/1.6 switch is set at .8 (0.8 MHz sector clock).

2. The Closed sector switches have the following values:

2^0	1
2^1	2
2^2	4
2^4	16
2^5	32
2^7	128

3. These numbers total $1 + 2 + 4 + 16 + 32 + 128 = 183$.

4. By adding 1, you get $183 + 1 = 184$.

5. A 736 MB drive with a 0.8 MHz sector clock has 2.25 bytes
    per sector clock pulse (from table B-1). You get the
    sector length by multiplying 184 by 2.25; it is 414 bytes.

You may be wondering at this point how long the last sector is. You have found that each of the early sectors is 414 bytes long. Refer to table B-1 to find the number of bytes per track (30 240 for this drive).

To find the number of full-length sectors, divide 30 240 by 414. It is 73 with a remainder of 18. This calculation implies that there are 73 sectors, each 414 bytes long, followed by a runt sector of 18 bytes.

These sector lengths are idealized in that the numbers do not reflect an adjustment that must be made to calculate the actual lengths of the first sector (logical sector 0) and the last sector. Table B-1 indicates the sector length adjustment (2.25 bytes for this example).

Including this adjustment, the sector lengths are as follows:

        Sector 0 = 414.00 + 2.25 = 416.25 bytes
        Sectors 1 thru 72 = 414.00 bytes
        Runt Sector = 414.00 - 2.25 = 411.75 bytes

REFERENCE MATERIAL FOR TYPE 2 AND TYPE 3 CONTROL BOARDS

The information in this appendix for Type 2 and Type 3 control boards supplements the instructions for sector selection given in section 3. Section 3 provides a number of options for sector selection and uses tables to indicate switch settings and sector lengths. For most installations section 3 provides all the information required.

The information in this appendix is intended more for systems designers who are matching the drive's sector length to the nonstandard requirements of certain controllers. This information is organized as follows:

- What the Sector Switches Do

- How to Set Desired Numbers of Sectors

- How to Set Desired Sector Lengths

- How to Calculate Sector Lengths

WHAT THE SECTOR SWITCHES DO

The sector switches supply a preset count to the sector counter circuit. This circuit counts sector clock pulses, starting at the preset value when index appears and after each new sector pulse is issued. When the sector counter has received a specific number of clock pulses, it issues another sector pulse and begins at the preset value to count again. A switch selection allows the choice of two values for the sector clock frequency.

Two numbers enter into all of the calculations presented here. They are the number of sector clock pulses per disk rotation and the number of bytes per track. Table B-2 summarizes these numbers.

TABLE B-2.   SECTOR CALCULATION DATA FOR TYPE 2 AND TYPE 3 BOARDS

Characteristics	736 MB Drives	850 MB Drives	1120 MB Drives	1230 MB Drives
Bytes per track	30 240	41 088	45 792	50 400
Sector clock pulses per disk rotation				
B/C switch set at C [B/8 = 8]	26 880	27 392	30 528	33 600
B/C switch set at B [B/8 = B]	30 240	41 088	45 792	50 400
Bytes per sector clock pulse				
B/C switch set at C [B/8 = 8]	1.125	1.5	1.5	1.5
B/C switch set at B [B/8 = B]	1.0	1.0	1.0	1.0
Sector length adjustment (bytes)				
B/C switch set at C [B/8 = 8]	4.5	6.0	6.0	7.5
B/C switch set at B [B/8 = B]	5.0	6.0	7.0	8.0

The individual sector switches are identified by their binary values (see section 3). Each sector switch represents a binary and decimal value of clock pulses (as counted in the logic). The values related to each switch are as follows:

Binary Value	Decimal Value
2^0	1
•2^1	2
2^2	4
•2^3	8
•2^4	16
2^5	32
•2^6	64
2^7	128
2^8	256
•2^9	512
2^{10}	1024
2^{11}	2048
2^{12}	4096
2^{13}	8192

HOW TO SET DESIRED NUMBERS OF SECTORS

This topic describes the process used for calculating sector switch settings for a desired number of sectors per disk rotation. This process is the basis for all the sector selection tables found in section 3. After a description of the process, there is an example of the calculation. The process makes use of numbers given in table B-2. Here are the steps required:

1. Calculate the number of selected clock pulses per sector. Use the following formula:

$$\text{Selected Clock Pulses} = \frac{\text{Sector Clock Pulses/Rotation}}{\text{Number of Sectors Desired}} - 1$$

2. If the result in step 1 is not an integer, either round it up or round it down. (The number 313.6, for example, can be rounded up to 314 or can be rounded down to 313.) Figure B-3 shows the effects of using the round-up and round-down methods, and section 3 contains some discussion of the two methods.
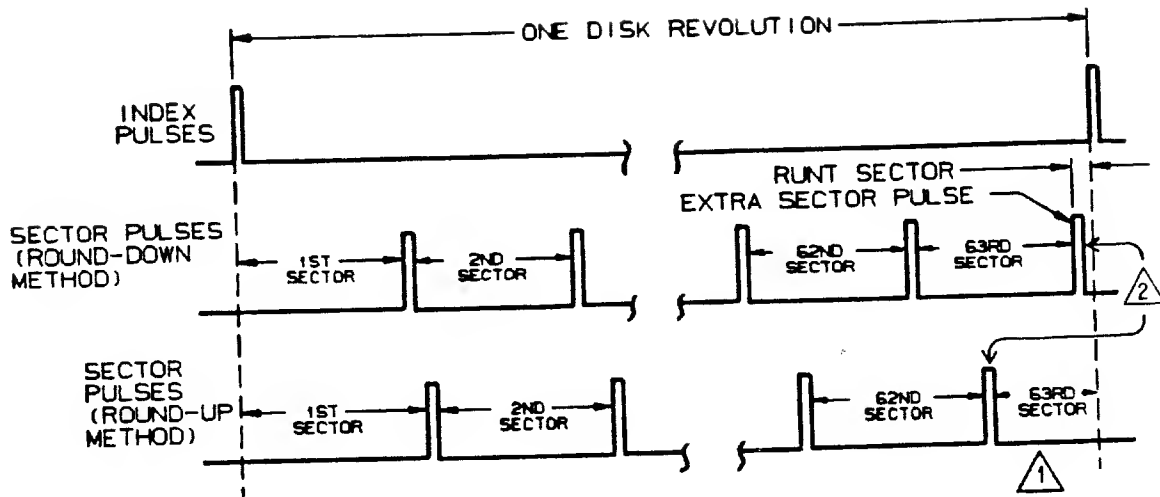
NOTES:

⚠️1 WITH ROUND-UP METHOD, LAST SECTOR MAY
BE SHORTER THAN EARLY SECTORS.

⚠️2 CONNECTING "RUNT" JUMPER SUPPRESSES
SECTOR PULSE PRECEDING SHORT LAST SECTOR.

IIHI30

Figure B-3. Round-up and Round-down Methods (Types 2 and 3)

3. Express the result of step 2 as a sum of individual
sector switch values (see previous page). When a switch
value appears in the sum, that switch must be placed in
the Open (Off) position.

Here is an example of determining the switch settings for
selecting 63 sectors on a 736 MB drive, using the 1.6 MHz
Sector Clock and the round-down method:

1. Selected Clock Pulses $= (\frac{26\ 880}{63} - 1) = (426.67 - 1)$

$= 425.67$

2. For the round-down method, this result becomes 425. (For
the round-up method, it would be 426.)

3. Determine which switches to place in the Open (Off) position as follows:

Selected clock pulses	425
Clock pulses selected by switch 2^8	$-\underline{256}$
(Difference)	169
Clock pulses selected by switch 2^7	$-\underline{128}$
(Difference)	41
Clock pulses selected by switch 2^5	$-\underline{32}$
(Difference)	9
Clock pulses selected by switch 2^3	$-\underline{8}$
(Difference)	1
Clock pulses selected by switch 2^0	$-\underline{1}$
(Difference)	0

Thus, placing switches 2^0, 2^3, 2^5, 2^7, and 2^8 in the Open (Off) position selects 63 sectors. Since a remainder existed in the formula and was rounded down, an additional sector pulse will appear just before index.

Refer to How to Calculate Sector Lengths (at the end of this section) for information on finding the number of bytes in the usable sectors and in the last sector. If the last sector is too short to be compatible with controller requirements, consider the option of runt suppression.

For future reference, you may want to record the switch settings you made. Use the following worksheet:

```
 _____
|                                                 |
|   Number of Sectors: _____                |
|                                                 |
|   Switch Settings:                              |
|    2^0 __    2^1 __    2^2 __    2^3 __    2^4 __|
|    2^5 __    2^6 __    2^7 __    2^8 __    2^9 __|
|    2^10 __   2^11 __   2^12 __   2^13 __         |
|                                                 |
|      B/C [or B/8] Switch:  On _____   Off _____  |
|      RUNT jumper: Connected __ Disconnected __   |
|   Sector Length: _____ bytes                |
|_____|
```

HOW TO SET DESIRED SECTOR LENGTHS

This topic describes the process used for calculating sector switch settings for a desired sector length. It also provides an example of the calculation.

With this method, there is no attempt to divide the disk rotation into nearly equal segments. Instead, the method starts with a known sector length (data field plus overhead, expressed in bytes). The process makes use of numbers given in table B-2. Here are the steps required:

1. Calculate the number of selected clock pulses per sector. Use the following formula:

$$\text{Selected Clock Pulses} = \frac{\text{Sector Length in Bytes}}{\text{Bytes per Sector Clock Pulse}} - 1$$

2. If the result in step 1 is not an integer, round it up. (The number 313.6, for example, would be rounded up to 314.)

3. Express the result of step 2 as a sum of individual sector switch values (see page B-11). When a switch value appears in the sum, that switch must be placed in the Open (Off) position.

Here is an example of determining the switch settings for selecting 572-byte sectors (512-byte data field plus 60 bytes of overhead) on an 850 MB drive, using the 1.6 MHz Sector Clock:

1. Selected Clock Pulses $= (\frac{572}{1.5} - 1) = (381.3 - 1) = 380.3$

2. Because this is not an integer, round it up to 381.

3. Determine which switches to place in the Open (Off) position as follows:

Selected clock pulses	381
Clock pulses selected by switch 2^8	$-\underline{256}$
(Difference)	125
Clock pulses selected by switch 2^6	$-\underline{64}$
(Difference)	61
Clock pulses selected by switch 2^5	$-\underline{32}$
(Difference)	29
Clock pulses selected by switch 2^4	$-\underline{16}$
(Difference)	13
Clock pulses selected by switch 2^3	$-\underline{8}$
(Difference)	5
Clock pulses selected by switch 2^2	$-\underline{4}$
(Difference)	1
Clock pulses selected by switch 2^0	$-\underline{1}$
(Difference)	0

Thus, placing switches 2^0, 2^2, 2^3, 2^4, 2^5, 2^6, and 2^8 in the Open (Off) position selects the sectors with the required length.

Refer to How to Calculate Sector Lengths (at the end of this section) for information on finding the number of bytes in the usable sectors and in the last sector. If the last sector is too short to be compatible with controller requirements, consider the option of runt suppression.

For future reference, you may want to record the switch settings you made. Use the following worksheet:

```
Sector Length: _____ bytes

Switch Settings:
  2^0 __    2^1 __    2^2 __    2^3 __    2^4 __
  2^5 __    2^6 __    2^7 __    2^8 __    2^9 __
  2^10 __   2^11 __   2^12 __   2^13 __

  B/C [or B/8] Switch:  On _____    Off _____

  RUNT jumper: Connected __ Disconnected __
```

HOW TO CALCULATE SECTOR LENGTHS

This method for calculating sector lengths uses the actual sector switch settings as a starting point. It works for any combination of switch settings regardless of how they were derived. This topic describes the process involved and provides an example of how to do the calculation.

1. Examine the sector switches and note which ones are in the Open (Off) position. Also note the position of the B/C [or B/8] switch.

2. For each sector switch noted in step 1, write down its decimal value given on page B-11.

3. Add the numbers accumulated in step 2. If you used the calculation formula in either of the preceding topics to obtain the sector switch settings, take note. The sum in this step is the same number derived in step 2 of those topics.

4. Add 1 to the result in step 3 to obtain the length of a sector expressed in sector clock pulses.

5. Multiply the result in step 4 by the number of bytes per sector clock pulse (given in table B-2) to obtain the number of bytes per sector.

Here is an example of determining the sector length for an 850 MB drive:

1. You observe that the following switches are in the Open (Off) position: 2^1, 2^2, 2^4, 2^5, 2^6, and 2^8. The B/C switch is set at C (1.6 MHz sector clock).

2. The Open sector switches have the following values:

2^1	2
2^2	4
2^4	16
2^5	32
2^6	64
2^8	256

3. These numbers total 2 + 4 + 16 + 32 + 64 + 256 = 374.

4. By adding 1, you get 374 + 1 = 375.

5. An 850 MB drive with a 1.6 MHz sector clock has 1.5 bytes per sector clock pulse (from table B-2). You get the sector length by multiplying 375 by 1.5; it is 562.5 bytes.

You may be wondering at this point how long the last sector is. You have found that each of the early sectors is 562.5 bytes long. Refer to table B-2 to find the number of bytes per track (41 088 for this drive).

To find the number of full-length sectors, divide 41 088 by 562.5. It is 73 with a remainder of 25.5. This calculation implies that there are 73 sectors, each 562.5 bytes long, followed by a runt sector of 25.5 bytes.

These sector lengths are idealized in that the numbers do not reflect an adjustment that must be made to calculate the actual lengths of the first sector (logical sector 0) and the last sector. Table B-2 indicates the sector length adjustment (6.0 bytes for this example).

Including this adjustment, the sector lengths are as follows:

    Sector 0 = 562.5 + 6.0 = 568.5 bytes
    Sectors 1 thru 72 = 562.5 bytes
    Runt Sector = 25.5 - 6.0 = 19.5 bytes

With the RUNT jumper connected (see section 3), runt sector pulses are suppressed. In this case, sector 72 contains 562.5 + 19.5 = 582 bytes.

ANHANG C

INSTALLATIONS- UND BETRIEBSERFORDERNISSE

EINLEITUNG

Dieser Anhang enthält Informationen für gefahrlose(n) Anschluß,
Betrieb und Wartung des Laufwerks.

SICHERHEITSHINWEISE

- Um die Zuverlässigkeit der im Laufwerk eingebauten
  Sicherheitseinrichtungen zu gewährleisten, darf die
  Installation und Wartung des Gerätes nur von
  qualifiziertem Wartungspersonal unter Verwendung von
  Original-CDC/MPI-Ersatzteilen durchgeführt werden.

- Beim Ausbrechen von Feuer oder in anderen Notfällen ist
  die Verbindung zum Hauptstromnetz durch das Ziehen des
  Netzsteckers aus der Steckdose zu unterbrechen. Sollte
  dies nicht möglich oder unpraktisch sein, so ist der
  Hauptstromunterbrecher des Systems zu bedienen, um die
  Laufwerke vom Hauptstromnetz zu trennen.

- Wenn das Laufwerk in einem Geräteeinschub oder Gehäuse
  montiert ist, versichern Sie sich, daß die Temperatur im
  Einschub oder Gehäuse die in diesem Handbuch festgelegten
  Werte nicht überschreitet. Sind Geräte übereinander
  angeordnet, achten Sie besonders auf das obere Gerät, da
  dort die Temperatur gewöhnlich am höchsten ist.

- Das Gerät ist konstruiert zum Anschluß und Betrieb in
  Übereinstimmung mit IEC380, IEC435, VDE805 und VDE806.

- Geräteschalter schaltet nur die Sekundärseite des
  Netzgerätes. Schalterstellung 1: Normal- und
  Ersatzgerät ist eingeschaltet. Schalterstellung 0:
  Normal- und Ersatzgerät ist ausgeschaltet. Vorsicht: in
  beiden schalterstellungen liegt die Netzspannung an den
  Geräten an.

- Falls das Netzteil an ein IT-Netzwerk angeschlossen wird,
  ist die Eingangsspannung auf 230 V zu begrenzen.

- Das Netzteil ist nicht im feld reparierbar. Versuchen
  Sie deshalb nicht, es zu zerlegen. Im Falle eines
  Defekts ist es komplett auszutauschen.

● Falls kein empfohlenes CDC Netzgerät verwendet wird, stellen Sie bitte sicher, daß das Netzgerät den Spezifikationen in diesem Manual entspricht und konstruiert ist für den Betrieb entsprechend IEC380, IEC435, VDE805 und VDE806.

ANSCHLUSS-ERFORDERNISSE

Der Installationsort muß dem in den folgenden Tabellen und Skizzen dargelegten Vorschriften entsprechen:

TABELLE C-1.   UMGEBUNGSBEDINGUNGEN

TEMPERATUR	BEREICH	MAX. ÄNDERUNGSWERT
Lagerung (verpackt)	-10 bis 50°C	15°C / h
Transit (verpackt)	-40 bis 60°C	20°C / h
in Betrieb	10 bis 45°C	15°C / h
RELATIVE FEUCHTE		
Lagerung (verpackt)	5% bis 95% (keine Kondensation erlaubt)	
Transit (verpackt)	5% bis 95% (keine Kondensation erlaubt)	
in Betrieb	20% bis 80% (keine Kondensation erlaubt)	
ATMOSPHÄRENDRUCK		
Lagerung (verpackt)	-305 m bis 3000 m oder 104 kPa bis 69 kPa	
Transit (verpackt)	-305 m bis 12 192 m oder 104 kPa bis 19 kPa	
in Betrieb	-305 m bis 3000 m oder 104 kPa bis 69 kPa	

83325710 C

TABELLE C-2.   ERFORDERNISSE FÜR EL. ANSCHLUSS

SPEZIFIKATION	WERTE	
	100 - 120 V ac	208 - 240 V ac
Spannungsbereich	85 bis 132 V	177 bis 264 V
Nominale Netz-Frequenz	50/60 Hz	50/60 Hz
Frequenzbereich	48,0 bis 62,0 Hz	48,0 bis 62,0 Hz
Phase	einphasig	einphasig
Leistungsbedarf*	0,140 - 0,145 kW	0,143 - 0,147 kW
Stromaufnahme*	2,5 - 2,2 A	1,5 - 1,4 A
Phasenwinkel *Cos phi	0,57 - 0,55	0,46 - 0,44
Anlaufstrom	siehe Abbildung C-1.	siehe Abbildung C-1.

* gemessen bei rotierendem Plattenstapel und Kopfschlitten in Bewegung.

NETZ-STROM (AMPERES/EFF.)

ANLAUFZEIT (SEKUNDEN)

120 V / 60 HZ

208 V / 60 HZ

100 V / 50 HZ

240 V / 50 HZ
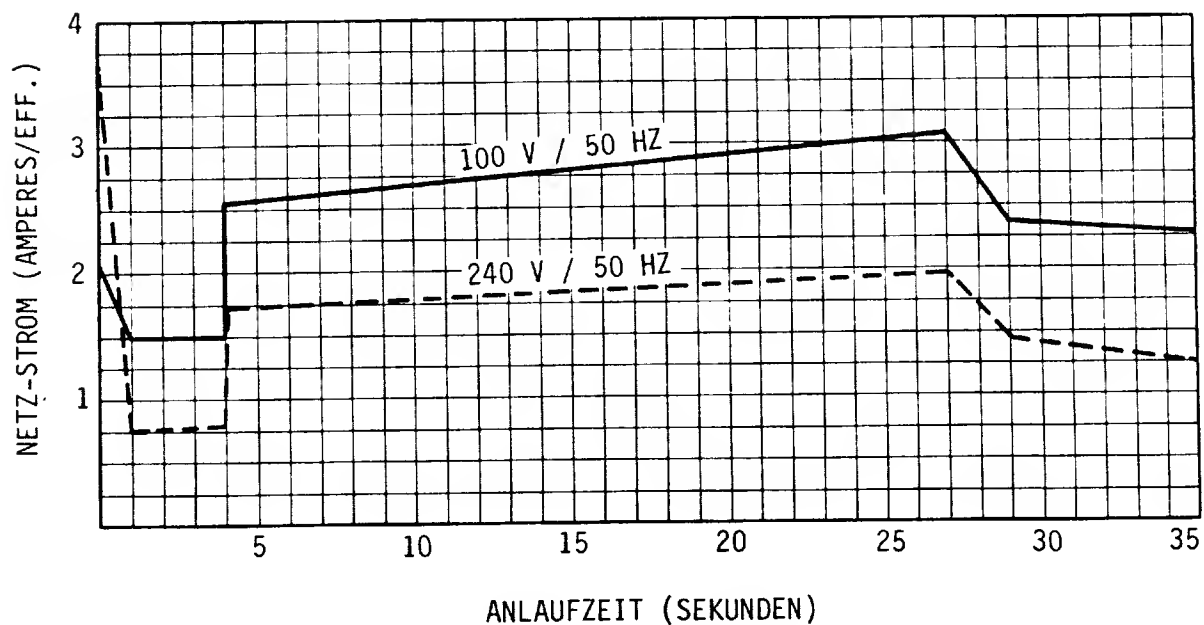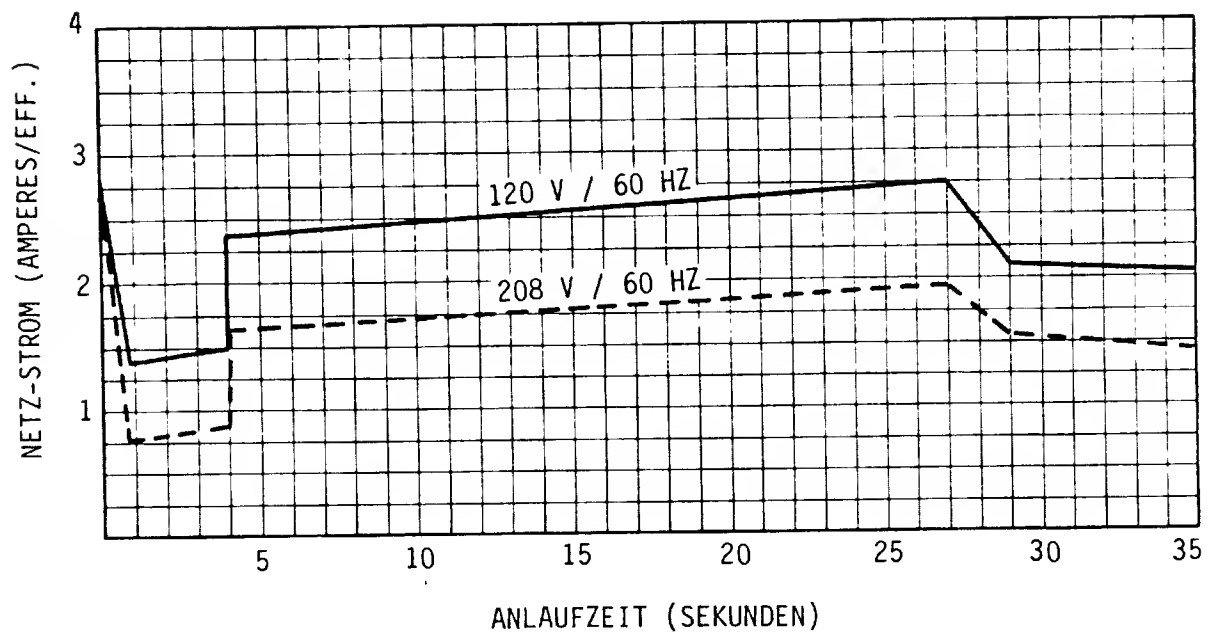
I2J6A

Abbildung C-1. Typischer Anlaufstrom im Verhältnis zur Zeit

DRAUFSICHT

216 mm
8.50 in

374 mm
14.72 in

44 mm
1.72 in

DRAUFSICHT

210 mm
8.25 in

121 mm
4.75 in

VORDERANSICHT

183 mm
7.2 in

SEITENANSICHT

NETZGERÄT

PLATTENLAUFWERK

121 mm
4.75 in

VORDERANSICHT

567 mm
22.32 in

SEITENANSICHT

10 mm
0.40 in
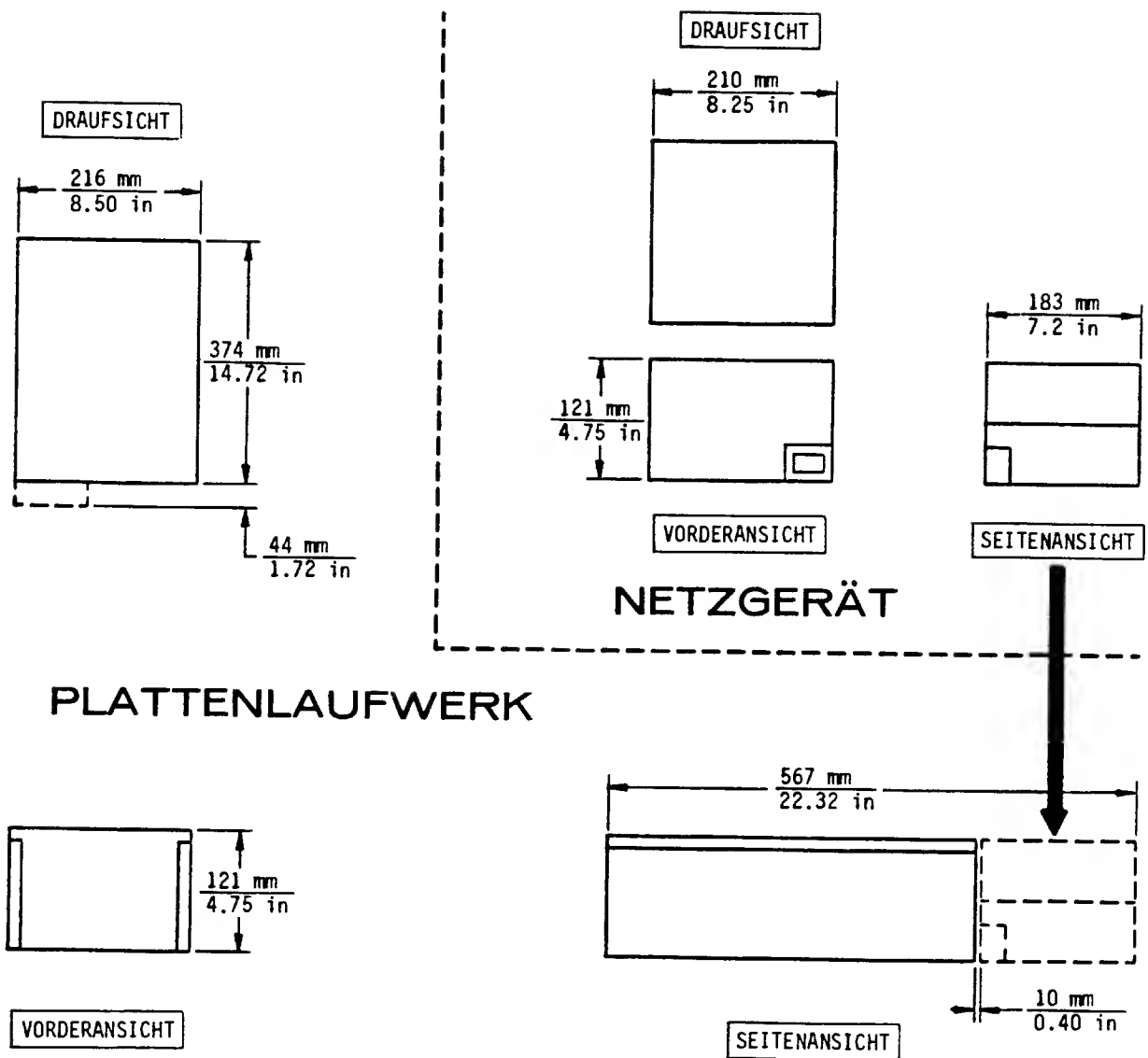
HINWEISI:

1. GEWICHT
   GERAT ALLEINE = 14,8 kg (32,8 lb)
   NETZGERAT ALLEINE = 3,6 kg (8 lb)

2. DIE ANGEGEBENEN ABMESSUNGEN SIND
   NOMINAL-WERTE

I2J5A

Abbildung C-2. Abmessungen und Gewicht des Laufwerks

BETRIEBSANLEITUNG (mit Status/Control Panel oder Operator Panel)

EINSCHALTSEQUENZ

1. Am Netzgerät Schalter ON/STANDBY auf 1 (EIN) stellen.

2. START-Schalter drücken.

   - Wurde der R/L (Remote/Local)-Schalter an der I/O-Karte während des Installationsvorganges auf "L" (Local) gestellt, beginnt die Einschaltsequenz unmittelbar.

   - Wurde der R/L-Schalter während des Installationsvorganges auf "R" (Remote) gestellt, ist die Einschaltsequenz verzögert, bis das Laufwerk das entsprechende Signal vom Kontroller erhält.

3. Die Bereitschaftsanzeige (kleine Lampe im START-Schalter) blinkt in rascher Folge, solange die Startsequenz abläuft.

4. Beobachten Sie, daß die Bereitschaftsanzeige innerhalb von 90 sec auf Dauerlicht wechselt, nachdem das Laufwerk Nenndrehzahl erreicht hat und die Magnetköpfe eingefahren sind.

5. Die FAULT-Anzeige muß unbeleuchtet sein, zum Zeichen, daß kein Fehler auftrat und das Gerät zum Lesen oder Schreiben von Daten bereit ist.

AUSSCHALTSEQUENZ

1. START-Schalter drücken. Wurde während des Installationsvorgangs der R/L-Schalter an der I/O-Karte auf "R" gestellt, so kann der Kontroller das Laufwerk veranlassen, die Ausschaltsequenz zu starten (Drücken des START-Schalters nicht erforderlich).

2. Die Bereitschaftslampe (kleine Lampe in START-Schalter) blinkt langsam, solange die Ausschaltsequenz abläuft.

3. Beobachten Sie, daß die Bereitschaftsanzeige nach etwa 60 sec verlöscht, zum Zeichen, daß die Ausschaltsequenz abgeschlossen ist. Die Magnetköpfe sind jetzt in der Landezone positioniert und der Plattenstapel rotiert nicht mehr.

4. Zur Unterbrechung der Gleichstromverbindung zum Laufwerk wird am Netzgerät der Schalter ON/STANDBY auf O (OFF) gestellt.

BETRIEBSANLEITUNG (ohne Status/Control Panel oder Operator Panel)

EINSCHALTSEQUENZ

Am Netzgerät ON/STANDBY-Schalter auf ON (1) stellen.

- Wurde während des Installationsvorganges der Schalter R/L (Remote/Local) an der I/O-Karte auf "L" (Local) gestellt, beginnt die Einschaltsequenz unmittelbar und ist innerhalb 90 sec abgeschlossen.

- Wurde der R/L (Remote/Local)-Schalter an der I/O-Karte während des Installationsvorganges auf "R" (Remote) gestellt, dann startet die Einschaltsequenz, wenn das Laufwerk das entsprechende Signal vom Kontroller erhält.

AUSSCHALTSEQUENZ

Der Ausschaltvorgang läuft unterschiedlich ab, abhängig von der Position, in welcher der R/L (Remote/Local)-Schalter steht.

Steht der R/L-Schalter an der I/O Karte auf L (Local):

- ON/STANDBY-Schalter auf O (AUS) stellen, um Gleichstromverbindung zu unterbrechen und die Ausschaltsequenz zu starten.

- Die Ausschaltsequenz ist etwa 60 sec nach ihrem Start abgeschlossen. Dabei kommt die Rotation des Plattenstapels zum Stillstand und die Magnetköpfe werden in der Landezone positioniert.

Steht der R/L-Schalter auf R (Remote), bestehen zwei Möglichkeiten zur Einleitung der Ausschaltsequenz:

- Fernbedienung: Hierbei veranlaßt der Kontroller das Laufwerk, die Ausschaltsequenz zu starten. Nach deren Abschluß besteht aber der Gleichspannungsanschluß zum Netzteil fort, wenn nicht der ON/STANDBY- Schalter auf O (OFF = AUS) gestellt wird.

- Lokale Bedienung: Der ON/STANDBY-Schalter wird auf O (AUS) gestellt. Dadurch wird der Gleichspannungsanschluß zum Laufwerk unterbrochen und die Ausschaltsequenz eingeleitet.

- Bei beiden Methoden ist die Ausschaltsequenz innerhalb von 60 sec nach deren Start abgeschlossen. Der Plattenstapel rotiert nicht mehr und die Magnetköpfe befinden sich in der Landezone.

APPENDICE D

INSTRUCTIONS D'INSTALLATION ET DE FONCTIONNEMENT

INSTRUCTIONS D'INSTALLATION ET DE FONCTIONNEMENT D

INTRODUCTION

Cet appendice contient les informations sécuritaires indispensables pour l'installation, le fonctionnement et la maintenance de l'appareil.

INFORMATION DE SECURITE

* Afin d'assurer l'intégralité des conditions sécuritaires installées dans l'appareil, l'installation et la maintenance doivent être accomplies exclusivement par un personnel qualifié utilisant des pièces recommandées CDC/MPI.

* En cas d'incendie ou autres états d'urgence, isolez l'appareil de la source de courant en retirant la fiche secteur de la prise de courant. Pour les situations ou il n'est pas possible ou praticable de retirer la fiche, utilisez la déconnection générale du système pour isoler les appareils de la source de courant.

* Si l'appareil est monté en rack ou en armoire, assurez-vous que la température interne du rack ou de l'armoire ne dépasse pas les limites définies pour l'appareil. Lorsque les appareils sont empilés verticalment, portez votre attention sur la partie supérieure du rack ou de l'armoire où les températures sont généralement plus élevées.

* Cet appareil est concu pour être installé et de fonctionner en accordance avec IEC380, IEC435, VDE805 et VDE806.

* L'interrupteur de l'alimentation ne coupe pas la tension secteur. L'interrupteur placé sur On (1) permet la distribution des tensions continues, sur la position Standby (0) elles sont bloquées. Mais dans les deux cas la tension secteur est présente à l'intérieur de l'alimentation.

* Si l'alimentation est branchées à un réseau IT, faites le nécessaire afin que la tension d'entrée ne dépasse pas 230 volts.

* Abstenez vous de décortiquer l'alimentation. Elle n'est pas reparable sur place. Remplacez l'alimentation complète en cas depanne.

- Si vous n'utilisez pas une alimentation recommandée CDC, assurez vous que l'alimentation soit conforme aux spécifications de ce manuel et qu'elle soit conçue pour être utilisée en accordance avec IEC380, IEC435, VDE805 et VDE806.

CONDITIONS D'INSTALLATION

Le lieu d'installation doit être conforme aux spécifications données dans les tableaux et figures suivants.

TABLEAU D-1. CONDITIONS DE L'ENVIRONNEMENT

TEMPERATURE	MARGE	FLUCTUATION MAXIMALE
Stockage (Emballée)	-10 à 50°C	15°C par heure
Transport (Emballée)	-40 à 60°C	20°C par heure
En service	+10 à 45°C	15°C par heure
HUMIDITE RELATIVE		
Stockage (Emballée)	5% à 95% (pas de condensation autorisée)	
Transport (Emballée)	5% à 95% (pas de condensation autorisée)	
En service	20% à 80% (pas de condensation autorisée)	
PRESSION BAROMETRIQUE		
Stockage (Emballée)	-305 m à 3000 m ou 104 kPa à 69 kPa	
Transport (Emballée)	-305 m à 12 192 m ou 104 kPa à 19 kPa	
En service	-305 m à 3000 m ou 104 kPa à 69 kPa	

TABLEAU D-2. EXIGENCES POUR L'ALIMENTATION

SPECIFICATIONS	VALEURS	
	100 – 120 V ac	208 – 240 V ac
Marge de tension	85 à 132 V	177 à 264 V
Fréquence nominale du réseau	50/60 Hz	50/60 Hz
Marge de fréquence	48.0 à 62.0 Hz	48.0 à 62.0 Hz
Phase éxigée	Monophasé	Monophasé
Puissance consomée*	0.140 – 0.145 kW	0.143 – 0.147 kW
Courant au réseau*	2.5 – 2.2 A	1.5 – 1.4 A
Cosinus Phi*	0.57 – 0.55	0.46 – 0.44
Courant de mise en route	Voir figure D-1.	Voir figure D-1.

* Mesuré lorsque les disques sont en rotation et que le chariot soit en mouvement.
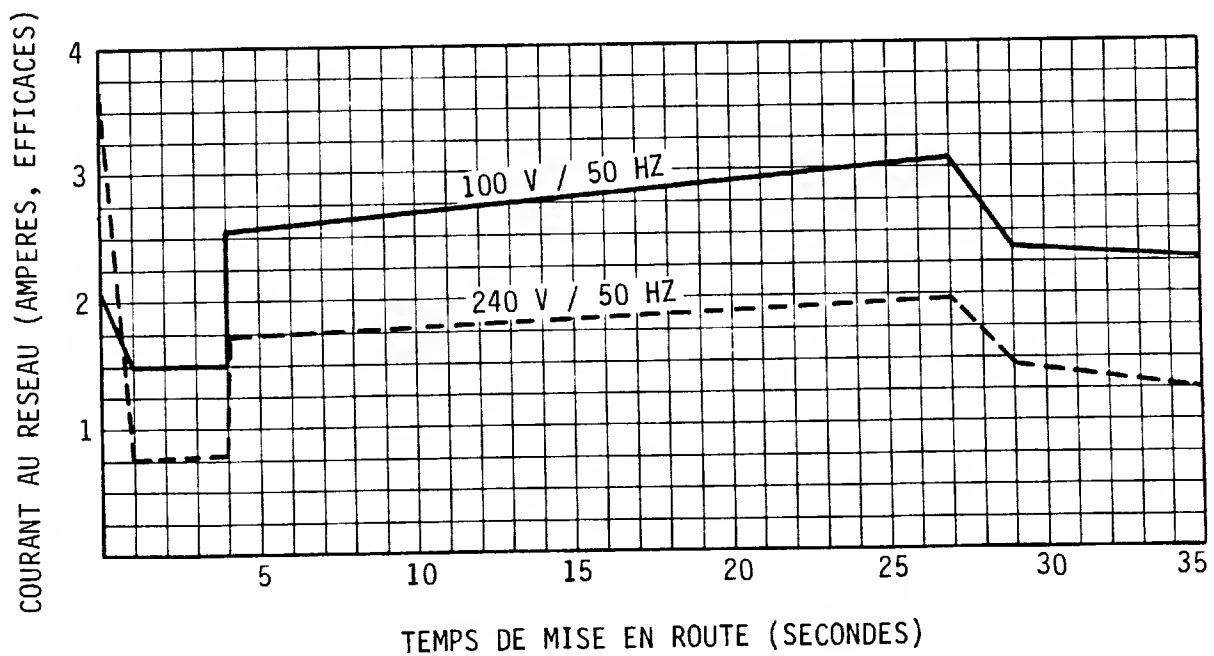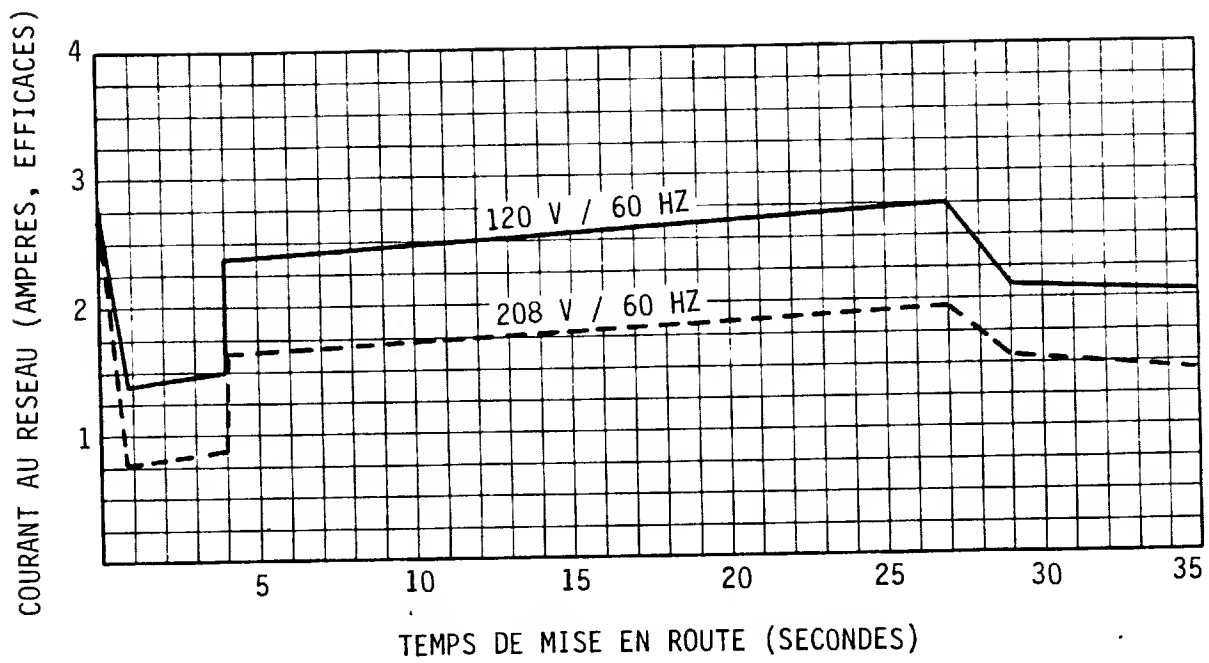
Figure D-1. Courant typique par rapport au temps de mise en route

83325710 C

VUE DE HAUT

216 mm
8.50 in

374 mm
14.72 in

44 mm
1.72 in

VUE DE HAUT

210 mm
8.25 in

121 mm
4.75 in

VUE DE FACE

183 mm
7.2 in

VUE DE COTE

ALIMENTATION

APPAREIL

121 mm
4.75 in

VUE DE FACE

567 mm
22.32 in

10 mm
0.40 in

VUE DE COTE
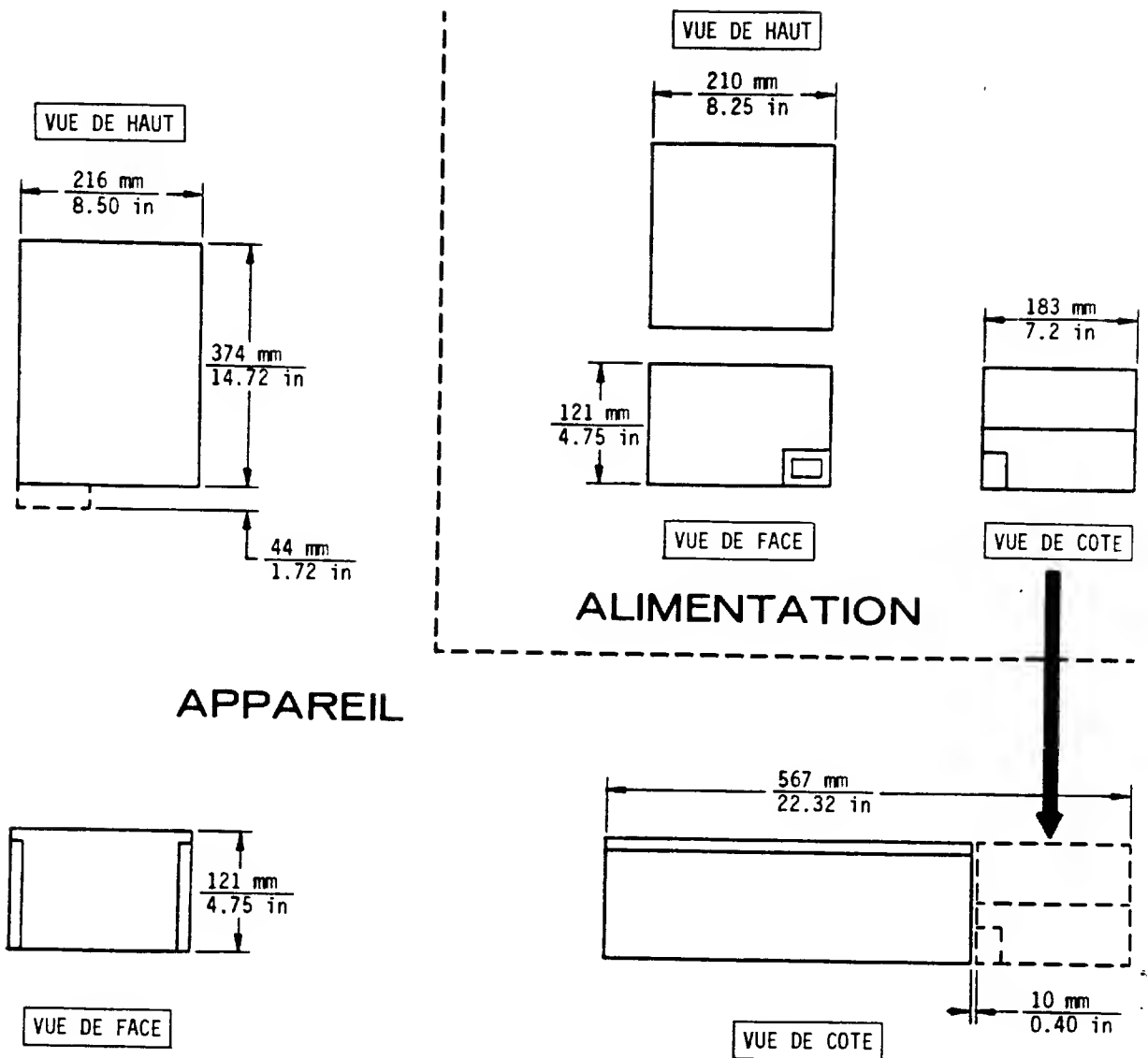
NOTES:

1. MASSE
   APPAREIL SEUL = 14.8 kg (32.8 lb)
   ALIMENTAIRE SEULE = 3.6 kg (8 lb)

2. LES DIMENSIONS DONNEES SONT NOMINALES.

12J7A

Figure D-2.   Dimensions et poids des appareils

INSTRUCTIONS DE FONCTIONNEMENT (avec panneau status/control ou operator)

PROCEDURE DE MISE EN ROUTE

1. Placez l'interrupteur On/Standby de l'alimentation sur 1 (On).

2. Pressez l'interrupteur START.

   - Si le commutateur R/L (Remote/Local) situé sur la carte I/O à été placé sur L (Local) à l'installation, la séquence de mise en route démarre aussitôt.

   - Si le commutateur R/L est place sur R (Remote) à l'installation, la séquence est retardée jusqu'a ce que l'appareil recoive le signal approprié du contrôleur.

3. Observez que l'indicateur Ready (placé dans l'interrupteur START) clignote rapidement pour signaler que la séquence de mise en route est en progression.

4. Observez que l'indicateur Ready luise continuellement dans un délai de 90 secondes pour signaler que les disques ont atteints leur vitesse nominale et que les têtes sont chargées.

5. Observez que l'indicateur FAULT soit éteint pour signaler l'absence d'erreurs et que l'appareil est prêt à lire ou écrire des données.

PROCEDURE D'ARRET

1. Pressez l'interrupteur START. Si le commutateur R/L placé sur la carte I/O à été placé sur R à l'installation, le contrôleur peut signaler à l'appareil de démarrer la séquence d'arrêt (il n'est pas nécessaire de presser l'interrupteur START).

2. Observez que l'indicateur Ready (placé dans l'interrupteur START) clignote lentement pour signaler que le séquence d'arrêt est en progression.

3. Observez que l'indicateur Ready s'éteigne après environ 60 secondes pour signaler que l'arrêt est complet. Les têtes sont maintenant positionnées dans la zone d'atterissage et les disques ne sont pas en rotation.

4. Retirez la tension continue de l'appareil en placant l'interrupteur On/Standby de l'alimentation sur O (Off).

<u>INSTRUCTIONS DE FONCTIONNEMENT</u> (sans panneau status/control ou operator)

PROCEDURE DE MISE EN ROUTE

Placez l'interrupteur On/Standby de l'alimentation sur On (1).

- Si le commutateur R/L (Remote/Local) situé sur la carte I/O à été placé sur L (Local) à l'installation, la séquence de mise en route démarre aussitôt et est terminée dans un délai aux environs de 90 secondes.

- Si le commutateur R/L à été placé sur R (Remote) à l'installation, la séquence de mise en route démarre lorsque l'appareil recoit le signal approprié du contrôleur. La séquence est complète environ 90 secondes après que l'appareil ait recu ce signal.

PROCEDURE D'ARRET

La procédure d'arrêt varie selon la position sur laquelle le commutateur R/L (Remote/Local) est placé.

Si le commutateur R/L sur la carte I/O est sur L (Local):

- Placez l'interrupteur On/Standby sur O (Off) afin de retirer la tension continue et démarrer la séquence d'arrêt.

- La séquence d'arrêt est complète environ 60 secondes après son départ. Après celà les disques sont arrêtés et les têtes sont dans la zone d'atterrissage.

Si le commutateur R/L est sur R (Remote) il y à deux moyens pour démarrer une séquence d'arrêt:

- Méthode Remote: Ici, le contrôleur signale à l'appareil de démarrer la séquence d'arrêt. Lorsque la séquence est complète, l'alimentation continue de fournir les tensions continues à l'appareil tant que l'interrupteur On/Standby n'est pas placé sur O (Off).

- Méthode Local: Vous placez l'interrupteur On/Standby sur O (Off). Ceci retire les tensions continues de l'appareil pour démarrer la séquence.

- Avec les deux méthodes la séquence d'arrêt est complète environ 60 secondes après son départ. Après celà les disques sont arrêtés et les têtes sont dans la zone d'atterissage.

APENDICE E

REQUISITOS DE INSTALACION Y OPERACION

INTRODUCCION

Este apéndice contiene información pertinente a la instalación, operación y mantenimiento seguro del disco.

INFORMACION DE SEGURIDAD

- Para asegurar la integridad de las caracteristicas de seguridad integradas en el disco, la instalación y el mantenimiento deben ser realizadas solamente por personal de servicio cualificado utilizando solamente piezas originales de CDC/MPI.

- En caso de fuego u otra emergencia, aislar el disco ·de la fuente principal de energia, desenchufando el cable de corriente del disco de la salida de corriente alterna. En situaciones donde quitar el enchufe no es posible ni práctico, utilize el sistema de desconexión principal para aislar los discos de las fuentes de energia.

- Cuando el disco está montado en un estante de equipos o en un armario, asegúrese de que la temperatura interna del armario no sobrepase los limites definidos para el disco. Cuando las unidades están almacenadas verticalmente, preste particular atención a la parte superior donde las temperaturas son normalmente más altas.

- Este disco está diseñado para ser instalado y operado de acuerdo a las normas IEC380, IEC435, VDE805 y VDE806.

- El interruptor de la fuente de alimentación no controla la entrada de corriente alterna. Poniendo el interruptor a "On" (1) abilita las salidas de corriente continua, y poniendolo en "Standby" (0) las desabilita. Pero en ambos casos la corriente alterna está presente dentro de la alimentación.

- Si la fuente de alimentación está conectada a un circuito IT, asegúrese que la tensión de entrada está limitada a 230 voltios.

- No intente desensamblar la fuente de alimentación. Ha de ser reparada en fábrica. Reemplaze la fuente de alimentación en su totalidad en caso de ser defectuosa.

- Si no utiliza una fuente de alimentación recomendada por CDC asegúrese que la fuente de alimentación cumple las especificaciones de este manual y está diseñada para ser usada de acuerdo con las normas IEC380, IEC435, VDE805 y VDE806.

REQUISITOS DE INSTALACION

El local de la instalación debe cumplir las especificaciones dadas en las siguientes tablas y cifras.

TABLA E-1.   REQUISITOS AMBIENTALES

TEMPERATURA	RANGO	VARIACION MAXIMO
Sin operar (desempaquetada)	-10 a 50° C	15° C por hora
Almacenada (embalada)	-40 a 60° C	20° C por hora
Operando	10 a 45° C	15° C por hora
HUMEDAD RELATIVA		
Sin operar (desempaquetada)	5% a 95% (sin condensación)	
Almacenada (embalada)	5% a 95% (sin condensación)	
Operando	20% a 80% (sin condensación)	
PRESION BAROMETRICA		
Sin operar (desempaquetada)	-305 m a 3000 m ó 104 kPa a 69 kPa	
Almacenada (embalada)	-305 m a 12 192 m ó 104 kPa a 19 kPa	
Operando	-305 m a 3000 m ó 104 kPa a 69 kPa	

TABLA E-2.   REQUISITOS DE ENERGIA

ESPECIFICACIONES	VALORES	
	Unidad de 100/120	Unidad de 208/240
Margen de tensión	85 a 132 V	177 a 264 V
Frecuencia nominal	50/60 Hz	50/60 Hz
Margen de Frecuencia	48 a 62 Hz	48 a 62 Hz
Fases	Monofásico	Monofásico
Consumo de Potencia*	0,140 - 0,145 kW	0,143 - 0,147 kW
Consumo de corriente*	2,5 - 2,5 A	1,5 - 1,4 A
Factor de potencia	0,57 - 0,55	0,46 - 0,44
Corriente de arranque	Vea la figura E-1	Vea la figura E-1
* Medidas cuando los discos están girando y el actuador moviendose.		
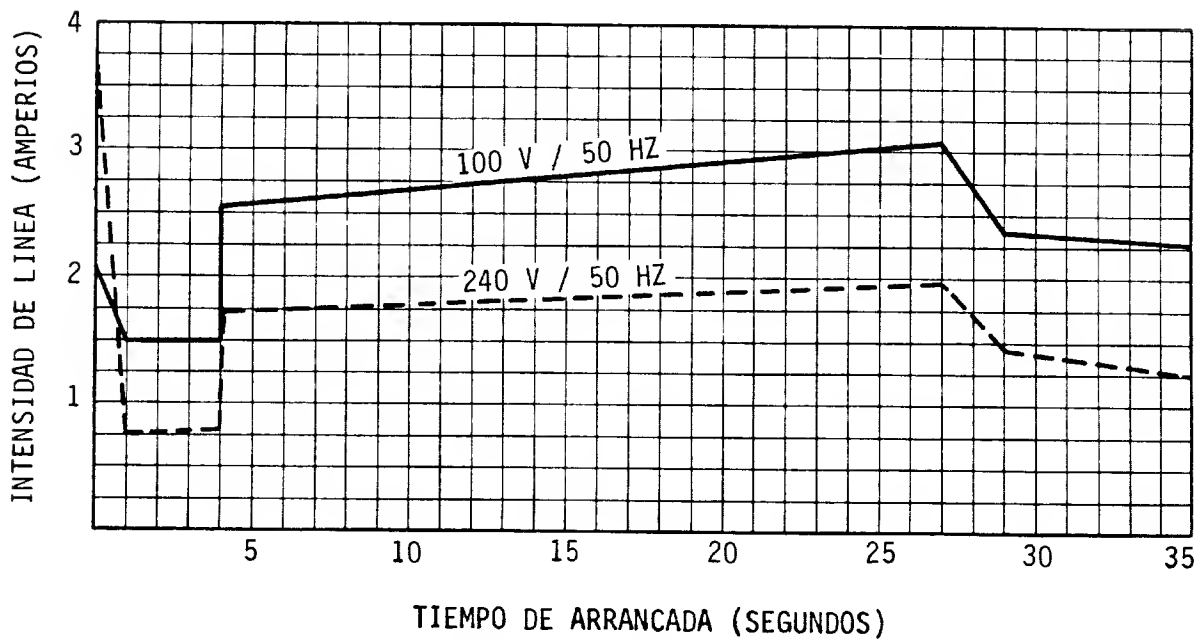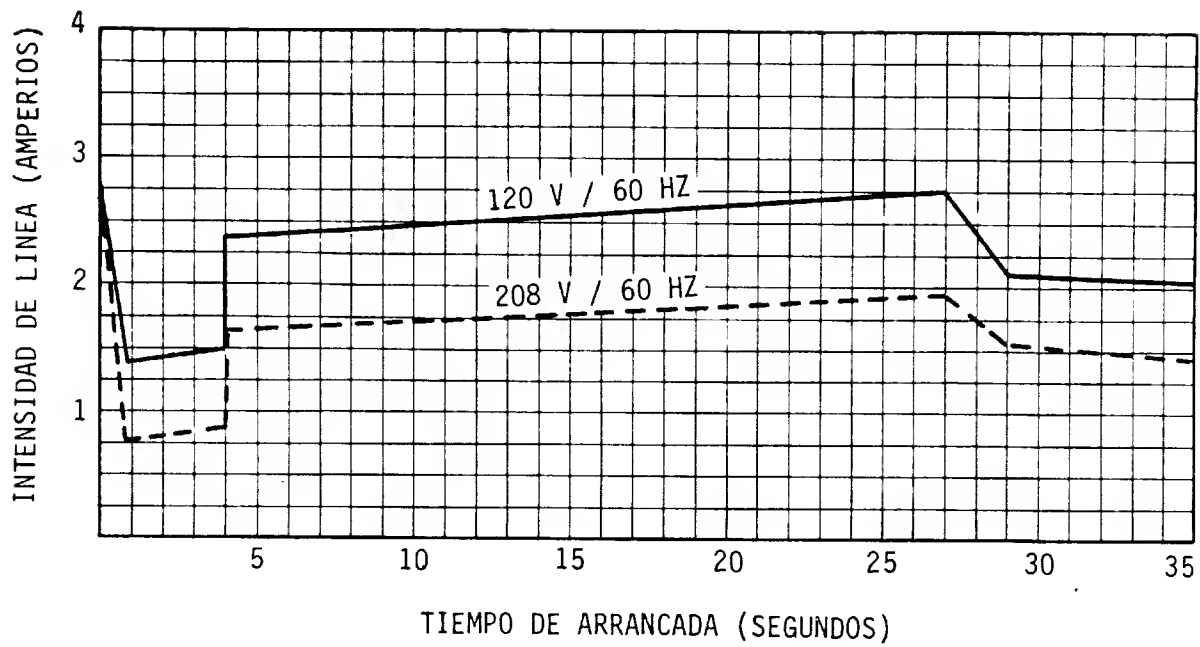
Figura E-1. Intensidad de línea y tiempos de arrancada

12J20

83325710 C

VISTA SUPERIOR

216 mm
8.50 in

374 mm
14.72 in

44 mm
1.72 in

VISTA SUPERIOR

210 mm
8.25 in

121 mm
4.75 in

VISTA FRONTAL

183 mm
7.2 in

VISTA LATERAL

FUENTE DE ALIMENTACION

UNIDAD DE DISCO

121 mm
4.75 in

VISTA FRONTAL

567 mm
22.32 in

10 mm
0.40 in

VISTA LATERAL
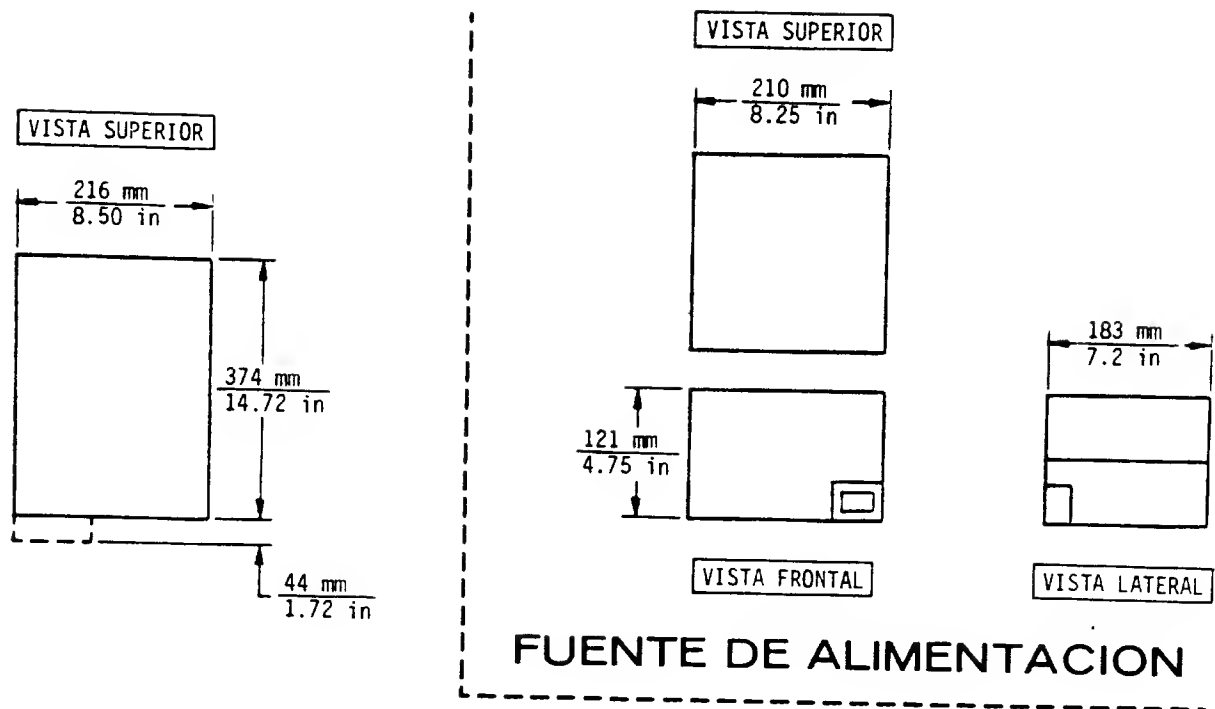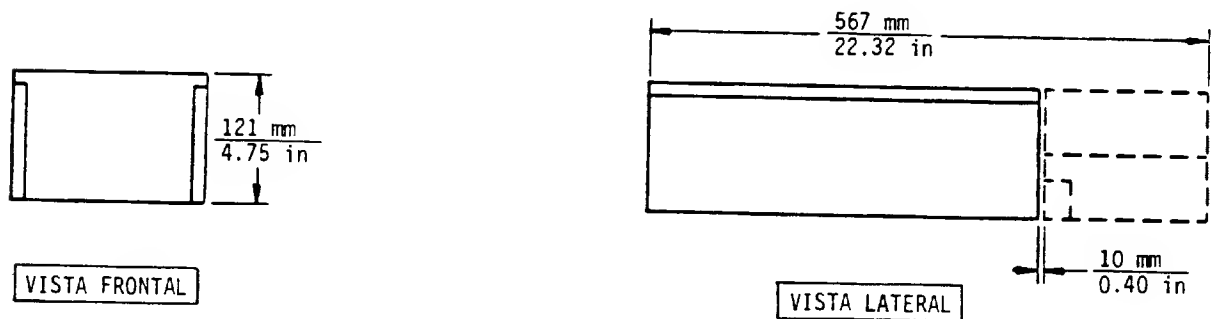
NOTAS:

1. MASA
   UNIDAD DE DISCO SOLAMENTE = 14,8 kg (32,8 LIBRAS)
   FUENTE DE ALIMENTACION SOLAMENTE = 3,6 kg (8 LIBRAS)

2. LAS DIMENSIONES SON NOMINALES.

12J34

Figura E-2.   Dimensiones y peso de la unidad de disco

INSTRUCCIONES DE OPERACION (Con Panel Status/Control ó Operator)

PROCEDIMIENTO DE ENCENDIDO

1. Fijar el interruptor "On/Standby" de la fuente de alimentación a la posición 1 (ON).

2. Pulse el interruptor "START".

   - Si el interruptor "R/L" (remoto/local) de la tarjeta de I/O ha sido puesto en L (local) durante la instalación, la secuencia de encendido comienza inmediatamente.

   - Si el interruptor "R/L" ha sido puesto en R (remoto) durante la instalación. La secuencia se retrasa hasta que el disco recibe la señal apropiada desde el controlador.

3. Observe que el indicador de "READY" (localizado en el interuptor "START") parpadea rapidamente indicando que la secuencia de encendido está en marcha.

4. Observe que 90 segundos más tarde el indicador de "READY" queda luciendo fijo, indicando que los discos están a su velocidad de régimen y las cabezas están cargadas.

5. Observe que el indicador de "FAULT" permanece apagado indicando que no han ocurrido errores y la unidad está disponible para leer o escribir datos.

PROCEDIMIENTO DE APAGADO

1. Pulse el interuptor de "START". Si el interruptor R/L en la tarjeta de I/O de la unidad ha sido puesto a R durante la instalación, el controlador puede ordenar al disco que inicie la secuencia de apagado (en ese caso no es necesario pulsar el interruptor "START").

2. Observe que el indicador de "READY" (localizado en el interruptor de "START") parpadea lentamente indicando que que la secuencia de apagado está en marcha.

3. Observe que aproximadamente 60 segundos despues el indicador de "READY" se apaga indicando que la secuencia de apagado ha finalizado. Las cabezas están ahora posicionadas en la zona de aterrizaje y los discos no están girando.

4. Retire la corriente continua de la unidad de discos fijando el interruptor "On/Standby" de la fuente de alimentación a la posición 0 (apagado).

INSTRUCCIONES DE OPERACION (Sin Panel Status/Control ó Operator)

PROCEDIMIENTO DE ENCENDIDO

Fije el interruptor "On/Standby" de la fuente de alimentación a la posición 1 (encendido).

- Si el interruptor R/L (remoto/local) de la tarjeta de I/O fue fijado a L (local) durante la instalación, la secuencia de encendido comienza inmediatamente y tarda aproximadamente 90 segundos en finalizar.

- Si el interruptor R/L fue fijado a R (remoto) durante la instalación, la secuencia de encendido empieza cuando el disco recibe la señal apropiada desde el controlador y finaliza 90 segundos aproximadamente despues de recibida tal señal.

PROCEDIMIENTO DE APAGADO

El procedimiento de apagado varía dependiendo de como ha sido fijado el interruptor R/L (remoto/local).

Si el interruptor R/L (remoto/local) de la tarjeta de I/O está en L (Local).

- Fije el interruptor "On/Standby" a 0 (apagado) para retirar la corriente continua de la unidad y comenzar la secuencia de apagado.

- La secuencia de apagado se completa 60 segundos despues de iniciada. Deja a los discos parados con las cabezas en la zona de aterrizaje.

Si el interruptor R/L está en R (remoto), hay dos maneras de iniciar la secuencia de apagado.

- Método remoto: Aqui, la señal del controlador ordena al disco que inicie la secuencia de apagado. Cuando la secuencia finaliza, la fuente de alimentación continua suministrando corriente continua al disco a menos que el interruptor "On/Standby" se fije a la posición 0 (apagado).

- Método local: Fijando el interruptor de "On/Standby" a la posición 0 (apagado). Retira la corriente continua de la unidad para iniciar la secuencia.

- Con cualquier método, la secuencia de apagado finaliza 60 segundos despues de iniciada. Y deja a los discos parados con las cabezas en la zona de aterrizaje.

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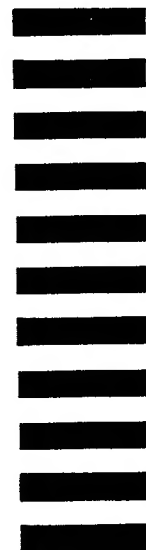
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